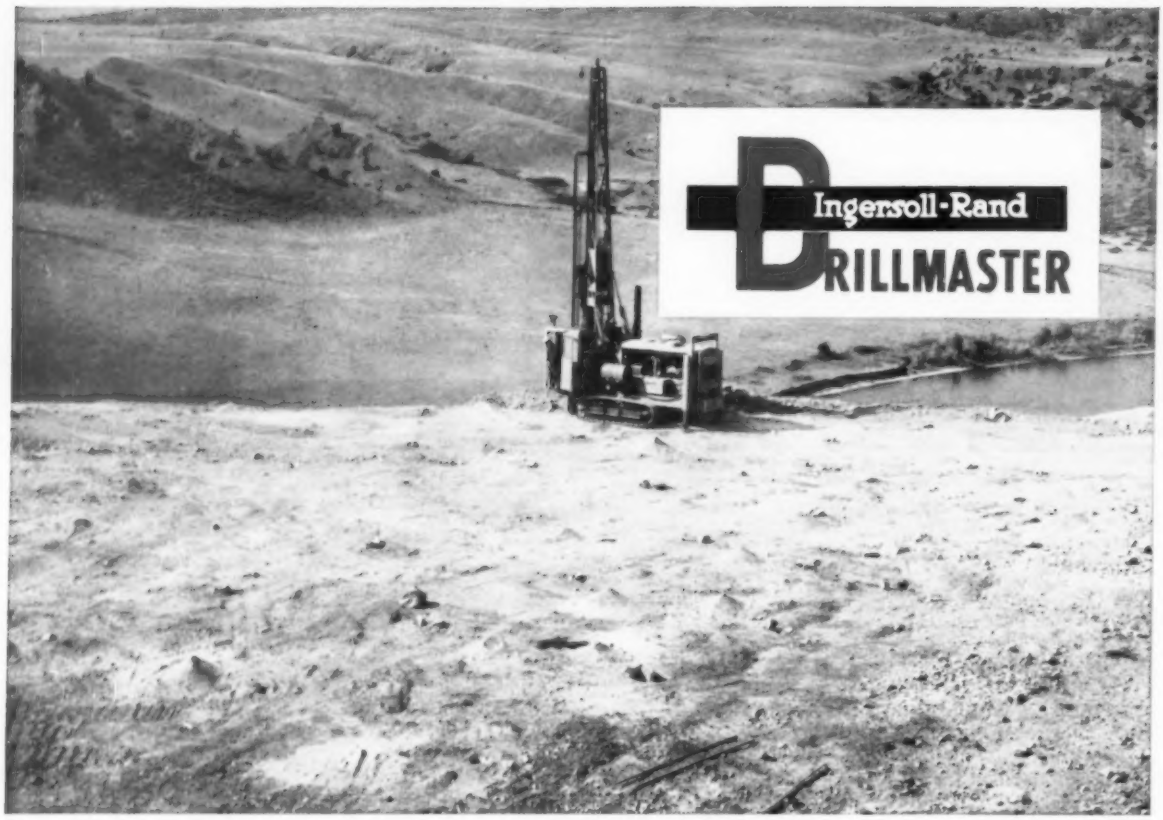
pit and quarry
THE BASIC MAGAZINE IN A BASIC INDUSTRY
january 1960

'59 REVIEW and '60 FORECAST



SPEEDS BLAST-HOLE DRILLING

for BIG SHOTS

The Ingersoll-Rand Drillmaster shown above is putting down the last blast holes for a *big shot* —using about six tons of ammonium nitrate! This big blasting job is part of a 225-ft. deep road cut on a new Montana highway that requires the removal of 1,500,000 yards of rock!

The contractor, Albert Lalonde Company, Sidney, Montana, picked a Drillmaster for the job because they wanted a completely self-contained unit with high drilling speed, easy maneuverability and extra dependability in heavy duty blast hole service. Using 7½-inch Carset bits with an I-R DOWNHOLE drill, this machine drills twelve 25-foot holes per 8-hour day, or up to sixteen 25-foot holes in 8½-hours with 4½-inch bits. The ground is sandstone, siltstone and shale.

This one I-R Drillmaster is doing *all* primary blast hole work for Lalonde's two contracts on the highway project, covering 11.78 miles with total removal of 1,740,000 yards.

For top performance at rock-bottom cost, drillers from coast to coast are turning to the Ingersoll-Rand Drillmaster. It's a high production unit designed and built to provide extra stamina and long life and drilling power that's right for any job. It will drill with roller-cone rotary bits or the sensational Ingersoll-Rand Downhole drill that goes down the hole with the bit to provide full striking power right at the bottom of the hole regardless of depth.

For complete information, contact your Ingersoll-Rand representative or send for Bulletin 4179.

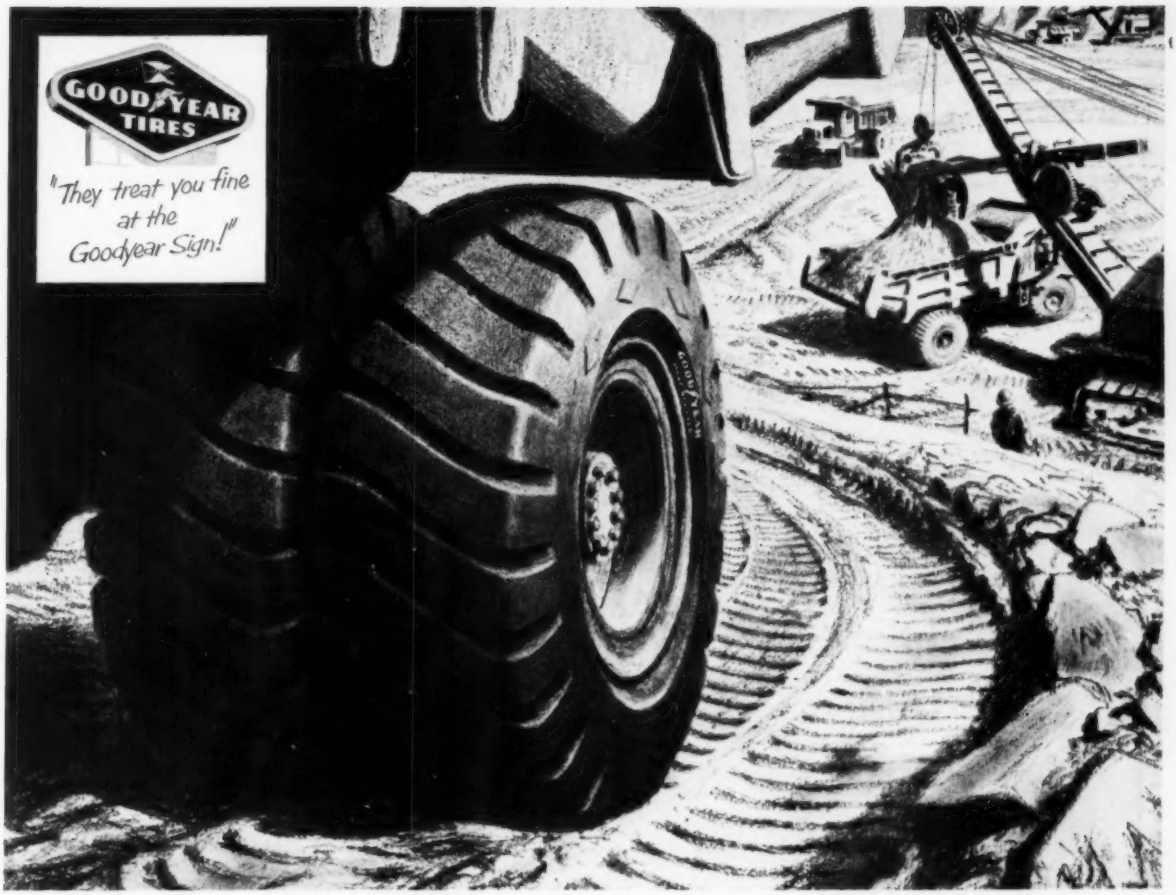
Ingersoll-Rand

5-898

11 Broadway, New York 4, N. Y.

A CONSTANT STANDARD OF QUALITY IN EVERYTHING YOU NEED FOR DRILLING ROCK

Enter Cover 2 on card, page 241

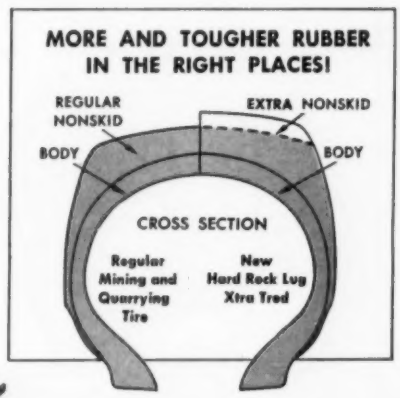


EXTRA TREAD TO TAKE IT WHERE THE GOING'S EXTRA TOUGH!

NEW HARD ROCK LUG XTRA TRED

Specially Engineered Tire for Mine and Quarry Work

More and tougher rubber in the right places—exclusive Triple-Tough 3-T Nylon Cord to back it up. That in a word is why this great new Goodyear tire tops its class. Specifically designed to take the hard knocks, the Hard Rock Lug Xtra Tred—with 18% more tread rubber, reinforced lugs, bonus shoulder heft and huskier sidewalls—stands up under tough punishment that kills lesser tires in short order. And thanks to 3-T Nylon Cord, greatest tire saver in 24 years, cuts, bruise-breaks and blowouts are reduced to an all-time low. Get full details from your Goodyear dealer now. Goodyear, Truck Tire Dept., Akron 16, Ohio.



GOODYEAR

Xtra Tred—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

Enter 1 on card, page 241

PIT AND QUARRY, January, 1960, Vol. 52, No. 7. Published monthly by Pit and Quarry Publications, Inc., 431 South Dearborn St., Chicago 5, Ill. Subscription price $3 for 1 year in the U.S., possessions and Canada. Central and South America $10 for 1 year, elsewhere $15. Single Copy $.50 except $1 for January, May and July. Entered as second class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1879. *Postmaster: Please send notices on Form 3578 and copies returned under label Form 3579 to 431 South Dearborn Street, Chicago 5, Ill.*

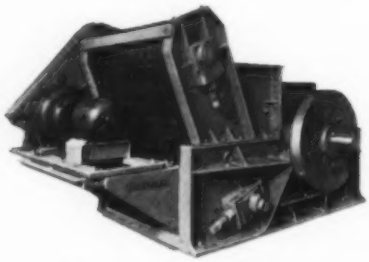
GRUENDLER—SINCE 1885

Famous Gruendler Crushers

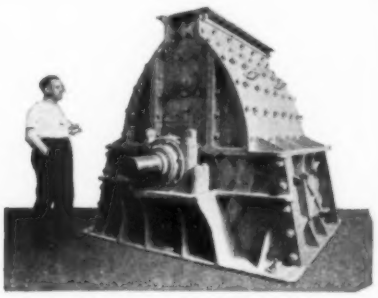
For the CEMENT, AGGREGATE and AG-STONE INDUSTRIES

Gruendler Crushers are seldom equaled for the low cost production of more uniformly crushed aggregates, where specification road rock and commercial aggregates are a requirement and for greater compaction. Gruendler Crushers for Cement Mills to increase the production of a finer product for better blending at lower cost. Gruendler Crushers for high tonnage production of a more uniform ag-stone and for a larger percentage of fines to meet your specifications. GRUENDLER'S LONG EXPERIENCE WILL SAVE YOU TIME AND MONEY.

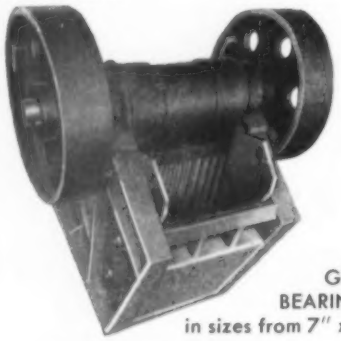
GRUENDLER HAMMERMILL
with patented Tramp
Metal Catcher



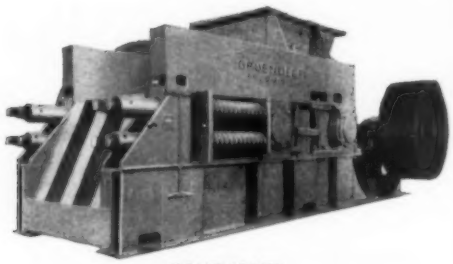
GRUENDLER HAMMERMILL
with Traveling Breaker Feeder



GRUENDLER HAMMERMILL
with Center Feed and Reversible
Rotor

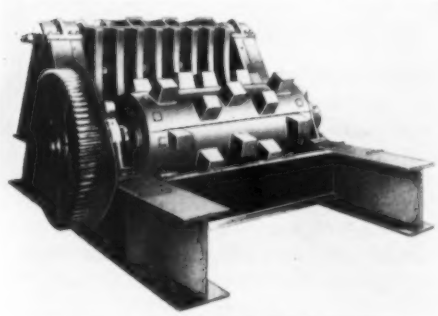


GRUENDLER ROLLER
BEARING JAW CRUSHER
in sizes from 7″ x 12″ to 42″ x 48″



GRUENDLER
DOUBLE ROLL SECONDARY CRUSHER
popular for producing the finer aggregates

SINGLE ROTOR PRIMARY IMPACT CRUSHER
for medium hard stone and for larger ratio
reduction



GRUENDLER SINGLE ROLL CRUSHER
for the reduction of shale, ore and coal in
Mining Industries

Regardless of our higher cost for doing business, today, these Gruendler Crushers will show you the way to HOLD DOWN YOUR COSTS in 1960.
Builders of both Stationary and Portable Plants for Industries. WRITE FOR BULLETINS.

GRUENDLER CRUSHER & PULVERIZER CO.

Dept. PQ-1-60 **2918 N. Market St.** **St. Louis 6, Mo., U.S.A.**

PIT and QUARRY

JANUARY 1960
VOL. 52 NO. 7

DEPARTMENTS

Washington News Letter . . . 11
Labor Developments 13
Screenings 15
News of the Industry 23
Coming Events 23
Industry Personalities 48
New Machinery 54
Legal Decisions 199
Manufacturers' News 213
More Information Please . . 241
Index to Advertisers 268

Published on the first of each month for producers and manufacturers of Cement, Crushed Stone, Gypsum, Lime, Sand, Gravel, Slag and other nonmetallic minerals.

Copyright 1960 by Pit and Quarry Publications, Inc., 431 S. Dearborn Street, Chicago 5, Illinois.

PIT AND QUARRY magazine was founded by H. W. Baumgartner, October, 1916.

To subscribers: When requesting change of address, kindly send old as well as new address.

PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX

In this Issue—

EDITORIAL

✓ Cement, Aggregates Set New Records—Further Increase Expected in 1960 83

REVIEW AND FORECAST SECTION 85

✓ Construction: Soars 10 Percent in 1959—Modest Gain Expected in 1960 . . . . . James G. Kostka 86

✓ Cement: 1959 Production, Shipments Up—Moderate Increase Expected in 1960; Long-Range Optimism Expressed . . . . . Walter E. Trauffer 92

✓ Aggregates: Follow Record-Toppling Habit . . . Buren C. Herod 106

✓ Other Nonmetals: Many Gain Strength—Recoup With Overall Economy . . . . . Buren C. Herod 112

PLANTS

✓ Vermont Gravel Plant Altered for Dual-Purpose Production . . . . . Walter E. Trauffer 138
Interstate highway demands lead to addition of crushed stone processing as alternate flow

✓ Raw Shale Found Adaptable for Lightweight Aggregate and Pozzolan . . . . . Harry F. Utley 143
Small rotary-kiln plant supplies Spokane concrete industries

✓ Parmar Sand, Inc.—Newcomer to Industry . . . Buren C. Herod 175
Plant design, operations of Pennsylvania plant reflect owners' foresight and ability

ASSOCIATIONS

N.S.G.A.-N.R.M.C.A. Convention Program 152
N.S.G.A.-N.R.M.C.A. Exhibits 153, 156
N.C.S.A. Convention Program 159
N.C.S.A. Manufacturers Division Exhibits 160

✓ Slag Producers Center Attention on Reduced Supplies of Slag, New Specialized Uses . . . . . Walter E. Trauffer 164
Status in specifications, and association business also covered at convention

TECHNICAL

The Coming Role of Pozzolans—Part IV . . . . . Wolf G. Bauer 181
Product potential through process design

OPERATING

Starting Your Diesel Engine in Cold Weather . . . . Herb Orwig 147
Some rules and tips on beating the winter difficulties

How Water Problems Were Solved at Marquette's Mississippi Plant 173
Difficult conditions overcome by haul road stabilization, specialized equipment and methods

SAFETY

N.S.G.A. Safety Contest Winners Cited in Fifth Annual Event 145

LEGAL

Your 1959 Income Tax Return . . . . . Harold J. Ashe 148
What you should know about deductions, exemptions, common errors in filing

The Tax Effect of Depreciation 167
Three methods of computing depreciation of plant equipment evaluated

ACCOUNTING

Alpha Automates Cement Orders 141
The common language of automation—punched paper tape—is removing human error from interplant and interoffice communication

✓ *Indicates a* PIT AND QUARRY *staff-written report*

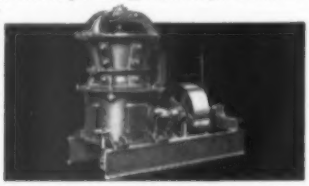
NO MAJOR REPAIRS IN 25 YEARS*

Sturtevant Construction Assures Long Mill Life at Top Loads

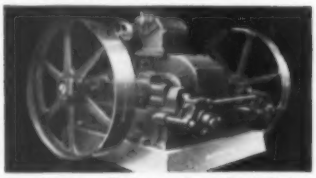
Sturtevant crushing and grinding machinery answers the long life top-load production problem for medium to small size plants. Many Sturtevants have been operating above rated capacities for more than 25 years, and *without a major repair.*

"Open-Door" design gives instant accessibility where needed — makes cleanouts, inspection and maintenance fast and easy. Machines may be set up in units to operate at equal quality and capacity.

Jaw Crushers — Produce coarse (5 in. largest model) to fine (⅛ in. smallest model). Eight models range from 2 x 6 in. jaw opening (lab model) to 12 x 26 in. Capacities to 30 tph. All except two smallest sizes operate on double cam principle — crush double per energy unit. *Request Bulletin No. 062.*



Rotary Fine Crusher — Reduce soft to medium hard 3 to 8 in. material down to ¼ to 1¼ in. sizes. Capacities up to 30 tph. Smallest model has 6 x 18 in. hopper opening; largest, 10 x 30 in. Non-clogging operation. Single handwheel regulates size. *Request Bulletin No. 063.*



Crushing Rolls — Reduce soft to hard 2 in. and smaller materials to from 12 to 20 mesh with minimum fines. Eight sizes, with rolls from 8 x 5 in. to 38 x 20 in.; rates to 87 tph. Three types — Balanced Rolls; Plain Balanced Rolls; Laboratory Rolls — all may be adjusted in operation. *Request Bulletin No. 065.*

Hammer Mills — Reduce to 20 mesh. Swing-Sledge Mills crush or shred medium hard material up to 70 tph. Hinged-Hammer Pulverizers crush or shred softer material at rates up to 30 tph. Four Swing-Sledge Mills with feed openings from 6 x 5 in. to 20 x 30½ in. Four Hinged-Hammer Pulverizers with feed openings from 12 x 12 in. to 12½ x 24 in. *Request Bulletin No. 084.*

**Reports Manager W. Carleton Merrill concerning Sturtevant Swing-Sledge Mill at James F. Morse Co., Boston.*

STURTEVANT
MILL COMPANY
104 Clayton St., Boston 22, Mass.

Enter 4 on card, page 241

pit and quarry

WALTER E. TRAUFFER
Editor

HARRY F. UTLEY
Pacific Coast Editor

ROY L. PECK
Field Editor

BUREN C. HEROD
Field Editor

M. E. ANSEL
Assistant Editor

JAMES G. KOSTKA
Director of Marketing and Research

JANET M. COHN
Editorial Assistant

JON DAY
Editorial Assistant

JAMES E. MONTGOMERY
Chairman of the Board

WILLIAM A. WILSON
President

RAY L. SMITH, JR.
Senior Vice-President

W. T. KLUSSMAN
Secretary-Treasurer

ROBERT L. RUDD
Circulation Manager

GEORGE P. GRANT
General Sales Manager

HAROLD L. DAVIS
Production Manager

RUTH KLAR
Production Assistant

CHICAGO BUSINESS OFFICE
431 South Dearborn Street, Chicago 5, Illinois, HArrison 7-8558

FRANK J. CORNYN
Vice-President and Midwest Sales Manager

RAYMOND S. NEUWELT
Midwest Advertising Manager

NEW YORK BUSINESS OFFICE
370 Lexington Avenue, New York 17, N. Y., MUrray Hill 5-4455

JOHN R. DUBLE
Vice-President and Eastern Sales Manager

RICHARD J. MURPHY
Eastern Advertising Manager

W. H. L. GETZ
Representative

CLEVELAND BUSINESS OFFICE
432 The Arcade, Cleveland 14, Ohio, CHerry 1-4431

CHARLES H. BUSSMANN
Vice-President and Central Sales Manager

J. G. JOHNSON
Central Advertising Manager

RALPH G. SCOTT
Representative

WEST COAST OFFICE
HARRY F. UTLEY, 820 N. Magnolia Avenue, Whittier, California

REPRESENTATIVES

FRED W. SMITH
1201 Forest View Lane, Vesthaven, Birmingham 9, Ala., TRemont 1-5762

THE McDONALD-THOMPSON CO.
San Francisco, California

EDWARD T. THOMPSON
3727 W. 6th Street
Los Angeles 5, California

T. HARRY ABNEY
National Building
Seattle 4, Washington

ROY M. McDONALD
625 Market Street
San Francisco, California

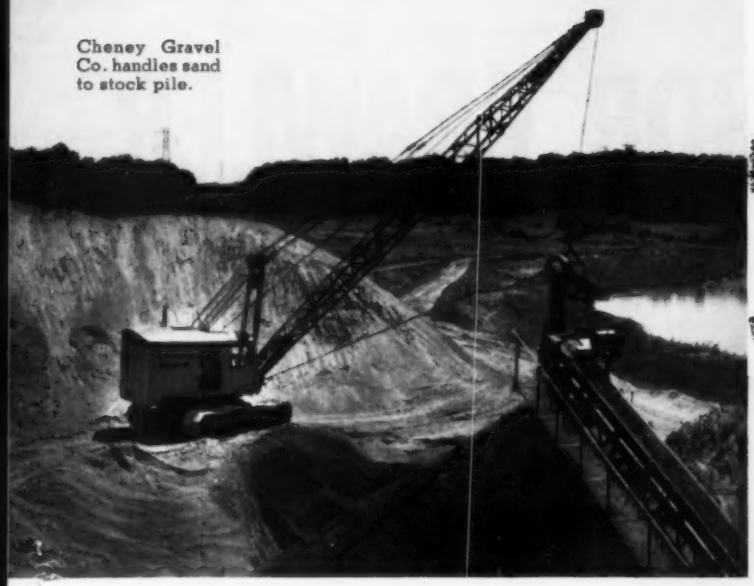
ROBERT H. HEIDERSBACH
620 Sherman Street
Denver 3, Colorado

FRANK N. VICKREY
3217 Montrose Blvd.
Houston 6, Texas

PARKER HARRIS
2727 Oak Lawn Avenue
Dallas 19, Texas

Enter 5 on card, page 241 →

TWO MORE NORTHWESTS FOR MICHIGAN GRAVEL PRODUCERS



Cheney Gravel Co. handles sand to stock pile.

NEED A BIG ONE? These big 95 Northwest Draglines may be the answer to your pit problems, wet or dry! Two more Northwest 95s have gone into sizable, well-equipped, well-operated gravel and sand producing operations in Michigan. Grand Rapids Gravel Company at Grand Rapids, is excavating material from the pit. Cheney Gravel Company, at Holt, is using their Northwest 95 on stock-piling.

These big Northwests are fast and they are always ready to go—*we hear it everywhere and Northwest users will tell you so.* They maneuver easily in close quarters, around bins and stock piles. Uniform Pressure Swing Clutches with their smooth operation and freedom from grabs and jerks handle long booms, so often necessary in a wet pit, and eliminate the whipping that makes spotting to hoppers difficult. The "Feather-Touch" Clutch Control brings the true feel of the load and gives ease of operation without resorting to pumps, valves, compressors and other delicate mechanisms. Cast Steel Machinery Bases and Machinery Side Frames, the Cushion Clutch, and many other advantages have proved themselves profitable for the gravel and sand producers many times over.

If you are planning on new equipment of this type, let a Northwest man bring you up to date on the size machine you need.

NORTHWEST ENGINEERING COMPANY
1515 Field Bldg., 135 South LaSalle Street, Chicago 3, Illinois

Grand Rapids Gravel Co. loading out material from the pit.

Ask about the NORTHWEST 25-D 3/4-yd!

Be sure to find out about the 25-D and the 25-D 18-ton Lifting Crane —New Independent High Speed Worm Boom Hoist, True Power Load Lowering, Longer, Wider Crawlers, Larger Drums and Greater Cable Capacity, Larger Drum Brakes and Clutches and many other advantages.

NORTHWEST Always Ready to GO

D-95-115

NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES

SHOVELS	CRANES	DRAGLINES	PULLSHOVELS	TRUCK CRANES
¾ Yd. to 2½ Yr. Capacity	13-Ton to 60-Ton Capacity	¾ to 3 Yd. Capacity	¾ Yd. to 2½ Yr. Capacity	25-Ton and 35-Ton Capacity

ALL-NEW THOR CRAWLER

outperforms Wagon Drills 3 to 1

And we'll prove it to you, right in your own office. Thor recorded the performance of this versatile crawler on film. See how this crawler can pay for itself. Your Thor "Red Tool" distributor will arrange a showing of this film—without obligation. Call him soon.

Left: Unique construction of the Thor Model TR-5 Crawler allows mast and boom to remain level on rough, uneven terrain. Boom and mast can be raised or lowered, mast can be swung from side to side, all hydraulically.

Above: One-man operation is easy with Thor's Model TR-5 Crawler. Complete flexibility of all-hydraulic controls raises boom and mast into position for drilling quickly. Rig locks into place and powerful Thor drifter goes into action.

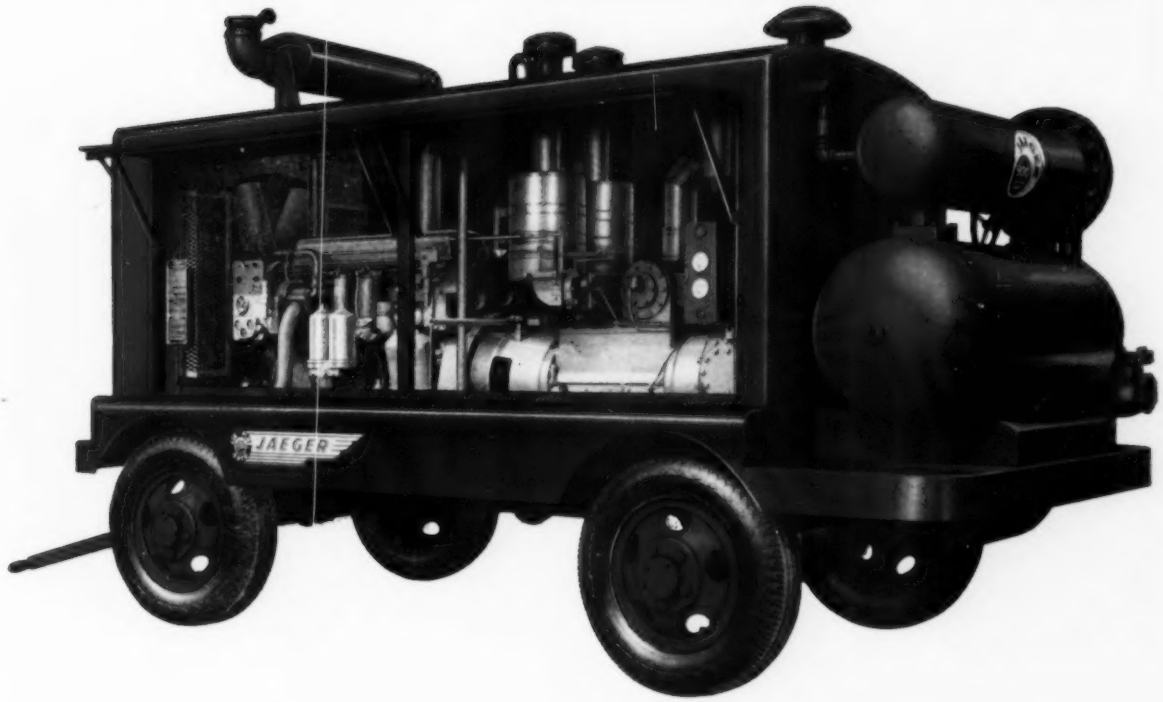
Right: Toe hole drilling is easy with the TR-5. The boom and mast can be lowered flat to the ground for toe or lifter holes. Automatic dump and cone control are operated hydraulically.

Drill down holes in record time! Thor TR-5 Crawler is equipped with Thor Model 140 4½" drifter with reverse rotation for easy steel change. Two 8 h.p. rotary air motors propel the compact drilling machine.

Thor PORTABLE POWER TOOLS

THOR POWER TOOL COMPANY, AURORA, ILLINOIS

Branches in all principal cities



JAEGER ANNOUNCES a more efficient "900" rotary

» The first "900" that delivers full capacity at a fuel-saving, engine-saving 1700 rpm . . . using the same GM 6-110 diesel which others operate at 1800. Your fuel factor is more than 500 cfm delivered air per pound of fuel consumed. *Ask your Jaeger distributor for details — or send today for complete catalog of Jaeger rotary air compressors.*

ON THIS TYPICAL ROCK JOB with two 4½" crawler-drills, the Jaeger "900" maintained 100 psig at the drills while never running faster than 1500 rpm. That's efficiency, that's fuel economy, that's long life.

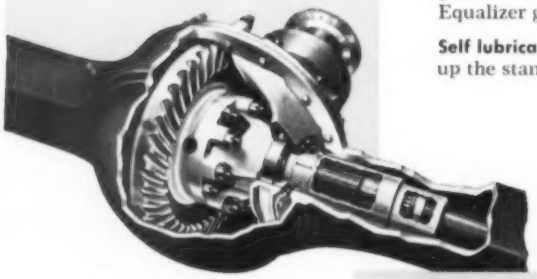
THE JAEGER MACHINE COMPANY, 602 Dublin Avenue, Columbus 16, Ohio

PUMPS • MIXERS • TRUCK MIXERS • PAVING MACHINES

NEW ROCKWELL TRACTION EQUALIZER...

puts the action where there's traction!

Available with Timken-Detroit® Axles for safer, surer performance... on or off the highway!



Applies driving force to wheels with best traction. The Rockwell Traction Equalizer provides a substantial increase in tractive effort to the wheel with the best road adhesion. It is effective on a vehicle even if one pair of the driving wheels has *no* traction!

Safer, surer operation. A truck equipped with the Rockwell Traction Equalizer is easier to control on curves, slippery pavement and soft ground. The tendency of a vehicle to swerve when one wheel suddenly loses traction is eliminated because wheel spinning is reduced.

Constant actuation. The Rockwell Traction Equalizer doesn't depend on the driver to start it working. It is effective whenever one wheel has the tendency to turn faster than the other.

Tailored for effectiveness. With multi-drive axle vehicles, each axle may be equipped with Traction Equalizer units. No matter where your vehicles operate—on or off the highway—the Rockwell Traction Equalizer gives your vehicles better traction.

Self lubricating. The Rockwell Traction Equalizer automatically picks up the standard axle lubricant and works it through the unit.

Less maintenance. The Rockwell Traction Equalizer normally requires no maintenance between axle overhaul periods. It also cushions heavy impact loads upon tires, shafts and gears.

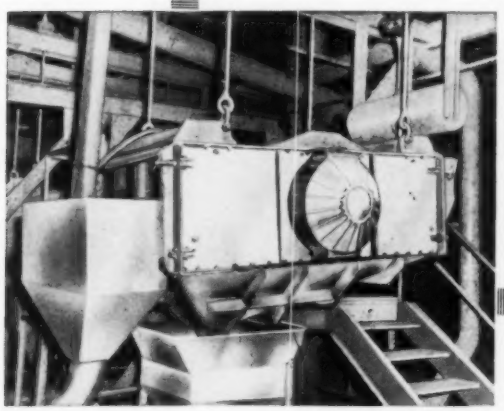
Another Product of...

ROCKWELL-STANDARD CORPORATION

ROCKWELL R STANDARD®

Transmission and Axle Division, Detroit 32, Michigan

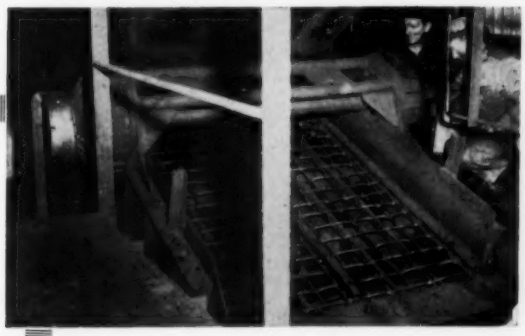
Why GYROSET SCREENS are Money-Makers!



Suspended Gyroset 3′ x 6′ scalping oyster lime slurry at 1/8″ opening, for a large cement company.

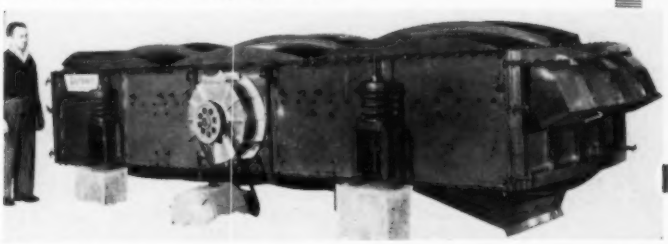
• • • • *uniform sizing*

5′ x 8′ special scalping screen with abrasion resistant liners—5″ opening.



• • • • • • *lower costs*

Enclosed unit for fine dusty screening.



• • • *increased output*

GYROSET-equipped plants are "all set" to achieve peak screening efficiency in 1960.

The positive eccentric action of GYROSET Screens gives a full circle throw over the entire screen surface. With only two bearings, the eccentric action has the fewest moving parts.

GYROSET Screens are equally effective for sizing, slurry scalping, washing or dewatering. They can operate at any degree of pitch (or slope). Easily adjustable for maximum output when rough scalping. Can be set for top efficiency in grading or dewatering with output exceeding any other screening unit. Stroke adjustable from 0 to 3/8″.

Enclosed unit for fine dusty screening such as finished cements, fine ground stone, lime, etc.

These machines are simply but ruggedly built, and adaptable in action. Sizes available: 36″ to 72″ wide, 4′ to 16′ long, one to three decks.

SEE US AT NAT'L SAND & GRAVEL SHOW, BOOTH No. 21 and NAT'L CRUSHED STONE SHOW, BOOTH No. 44

GYROSET Advantages

- ► Positive Eccentric Action
- ► Positive Stroke Adjustment
- ► Only 2 Bearings
- ► Heavy Structural Shaft Housing
- ► Center Line of bearing and fly wheel close to side sheets for minimum overhang.
- ► Taper lock fly wheel bushing for assured tightness and ease of maintenance.

PRODUCTIVE EQUIPMENT CORP.

2924 W. LAKE ST., CHICAGO 12, ILL.

International Minerals cuts costs, bag breakage with WONDERWALL™

"With 70 plants in 30 states, bag breakage was a major problem," relates S. Arthur Fournier (*standing*), Purchasing Agent, Central Buying, for International Minerals & Chemical Corporation, Skokie, Illinois. "Since switching to WONDERWALL bags, breakage has been reduced up to 90% on shipments from plants using only WONDERWALL."

Customer Service Manager Joseph J. Bozis explains: "We *tested* the bag. We loaded cars half with WONDERWALL, half with conventional kraft bags. In every examination on arrival at destination WONDERWALL breakage was substantially less than ordinary kraft multiwalls."

WONDERWALLS prove better because they're made with Kraftsman Clupak* paper, the tough, impact-resisting kraft with the built-in stretch—pioneered by West Virginia.

Whether you pack fertilizer, cement, flour, feed or chemicals, tougher WONDERWALL can save *you* money while reducing bag breakage. For the whole story, write Multiwall Bag Division, West Virginia Pulp and Paper Company, 230 Park Avenue, New York 17, N. Y.

*Clupak, Inc.'s trademark for extensible paper, manufactured under its authority.

West Virginia Pulp and Paper

Washington News Letter

By S. HERBERT UNTERBERGER

BECAUSE of the critical importance of the construction industry to the total prosperity of the nation, Washington officials always keep a careful watch on what is happening in this field. This is not only one of the most significant sectors of the economy; it is also the one which, traditionally, has paced the rest of the economy. Construction down-turns, at least historically, have appeared to lead broader economy down-turns, and construction up-turns appear to have paralleled a general upward trend.

For this reason one Washington agency or another very frequently will be found "taking the temperature" of the construction industry. Recently, this chore has been performed by the Department of Commerce.

While this agency has found that construction expenditures for commercial and industrial properties rose steadily last year—by the end of 1959 it was running 4 percent higher than the figure at the same time in 1958—it was still running 4 percent below the total for that time in 1957. Nor is the outlook necessarily one of continuing recovery from the 1958 recession low. The strike-induced steel shortage is partially accountable for this situation. But other forces also seem to be at work. The trends are far from identical in the various segments of construction for industrial and commercial purposes.

Industrial construction began to rise during the second quarter of 1959. This was a rather delayed recovery. After the two previous post-World War II recessions, the recovery in plant construction began at almost the same time as other phases of the recovery. This last time it lagged by at least six months. An important factor in this situation is the fact that, for almost the first time since World War II, public utility construction, particularly that of electric and gas utilities, has eased up. Recently, the sale of a large volume of securities by such utilities indicated that capacity expansion may follow soon.

Sustaining a part of this heavy construction industry has been the very large increase—over 30 percent—in the construction of social and recreational buildings, a category that includes commercial types like bowling alleys and quasi-public community buildings.

Outlays for religious buildings, which, incidentally, showed no decline from 1957 to 1958, have increased by 10 percent in 1959. The volume of school building has changed very little since 1954. On the other hand, hospital construction has fallen below 1958, although additional money becoming available under the federal aid program will probably reverse this trend.

The really bright spot in recent years has been commercial construction. It fell hardly at all in 1958, and in 1959 it began to run as much as 15 percent above the 1958 level. Much of this increase is accounted for by store construction, which, in turn, is related to the population movement into suburban areas and the need for new shopping facilities in those areas. A dramatic story of this shift in the locale of retail sales is told by the following statistics, compiled recently by the Census Bureau, showing the percent of increase in retail sales between certain pre- and post-war years:

Percentage of Increase in Retail Sales in 20 Large Metropolitan Areas

	Central urban areas	Non-central urban areas
From 1939 to 1948	172	215
From 1948 to 1954	19	60
From 1954 to 1958	6	28

In the war and post-war years, the growth in the two types of areas was not very different. Thereafter, the growth outside the central urban sections was three times that of the central urban areas. In recent years the growth rate in non-central urban communities has increased to almost five times the rate in central urban communities. In view of the fact that the commercial facilities in the down-town areas were already built up and, generally, were subjected only to modernization, while in the suburban communities they generally had to be built from the ground up, this trend resulted in a construction expansion even larger than the sales expansion.

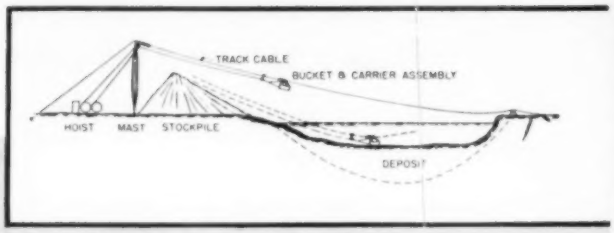
Office building construction has also benefited from a developmental trend, namely toward an increasing proportion of clerical and technical workers. This growing force of white collar workers needed to be housed in office structures. Since this trend has not reached its peak, the growth in such construction will probably continue for some time.

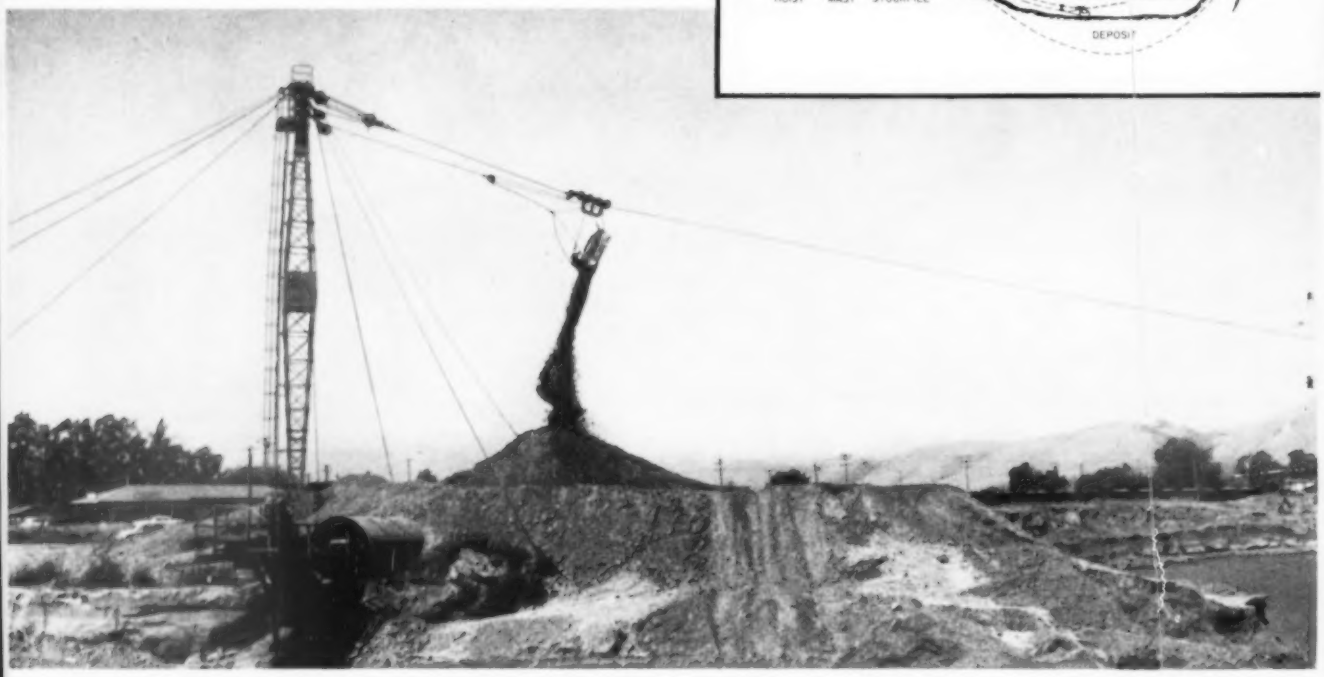
While the trends are divergent, on the net it appears that industrial and commercial construction will continue to expand well into 1960 and, perhaps, through the entire year. The outlook on residential construction is not so optimistic. Here the problem is not expected to be the result of a shortage of buyers, but, rather, of a serious shortage of mortgage funds. In 1959 a total of 1,300,000 home starts were recorded. Current Washington predic-

(*Continued on page* 68)

GET ALL THE MATERIAL OUT OF YOUR PIT

A Sauerman Slackline Will Recover It For 6 Cents A Ton





Plants Like This Are Turning Hard-To-Reach And Deep Materials Into Increased Profits

One way to beat increasing land values and depleting resources is to get all the material out of your present deposit. You can do this with a Sauerman Slackline Cableway. The machine starts at ground level and continues to work at depths and distances that cannot be reached with other excavating equipment. A Slackline will dig 100 feet below water and haul loads over 1000-ft. spans.

A Sauerman Slackline beats rising operating and labor costs, too. It provides what is probably the most economical of all excavating and hauling methods. Operating costs as low as 6 cents per ton for labor, power and maintenance are frequently reported.

Another advantage of the Sauerman Slackline is that it can be operated continuously in all types of weather. This permits building a ready stockpile to meet seasonal or unforseen demands.

If you are starting a new plant or updating an existing one, do it with the machine that gets the most out of your deposit at lowest possible cost. Sauerman Slacklines are built in sizes up to 3½ yds. to match your tonnage requirements. Write or call about your deposit. We'll recommend the proper machine.

Bucket inhauling load from 100-ft. depth.

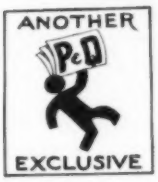
SAUERMAN BROS., INC.

634 So. 28th Ave., Bellwood, Illinois
Linden 4-4892 • Cable CABEX—Bellwood, Illinois

Crescent DragScrapers • Slackline and Tautline Cableways • Durolite Blocks

Labor Developments

Employer Reports



By S. HERBERT UNTERBERGER

S. Herbert Unterberger and Company
Economists-Consultants on Labor and Industrial Relations
Washington, D.C.-Philadelphia, Pa.

ALTHOUGH the recently enacted labor law was directed principally against unions and requires them to reveal much about their internal operations in reports which they are required to file with the Secretary of Labor, it also requires employers to file reports under a number of fairly common circumstances.

The penalty for failure to file can be rather severe. A fine of $10,000 and imprisonment for one year are possible maximum criminal penalties for willfully violating the reporting requirements, as well as for making false statements or entries, concealing information or records, or destroying records. To be sure, such severe penalties are unlikely to be imposed in the first instance, if the failure to file has been an oversight. However, the Secretary of Labor or the Department of Justice may feel impelled at times to impose high penalties, in order to make examples of some neglectful employers and thereby influence others to observe the law's requirements more scrupulously.

It is not too soon for employers to begin considering what they will have to report, since the first reports are required within 90 days after the end of the first fiscal year completed after the effective date of the law. Since the fiscal year of many businesses are the same as the calendar year, many employers will have to file such reports by March 30.

An employer must file a report if, during a fiscal year, he makes:

1. Any payment or loan (direct or indirect) of money or other things of value (including reimbursed expenses), or any promise or agreement thereof, to any labor organization or officer, agent, shop steward, or other representative of a labor organization, or employee of any labor organization, except payments permitted under the Labor Management Relations Act and payments or loans made by any national or state bank, credit union, insurance company, savings and loan association or other credit institution.

(Note: Payments permitted under the Labor Management Relations Act are generally payments for check-off of dues and contributions to welfare funds.)

2. Any payment (including reimbursed expenses) to any of the employer's employees, or any group or committee of such employees, for the purpose of causing such employee, group, or committee to persuade other employees to exercise or not to exercise, or as to the manner of exercising, the right to organize and bargain collectively through representatives of their own choosing unless such payments were contemporaneously or previously disclosed to such other employees.

(Note: This is not limited to payments of employees who are within the bargaining unit and, therefore, represented by the union; it covers all employees, including supervisory employees and members of top management.)

3. Any expenditure, during the fiscal year, with the object, directly or indirectly, to interfere with, restrain, or coerce employees in the exercise of the right to organize and bargain collectively through representatives of their own choosing, or to obtain information concerning the activities of employees or a labor organization in connection with a labor dispute involving the employer, except for use solely in conjunction with an administrative or arbitral proceeding or a criminal or civil judicial proceeding. Provisions do not apply to expenditures to obtain information concerning labor disputes in which the employer is not involved.

(Note: This requirement draws some very fine lines, particularly in connection with obtaining information concerning the activities of employees or a labor organization in connection with a labor dispute involving the employer. Reports need only be made of expenditures of this kind which are *not* for use *solely* in conjunction with an administrative or arbitral proceeding or a criminal or civil judicial proceeding. This is a relatively narrow exemption which is almost certain to give trouble in a number of borderline cases, for example if the information obtained for the exempted purposes is also used in the negotiations over a grievance which may go to arbitration but may be settled earlier.

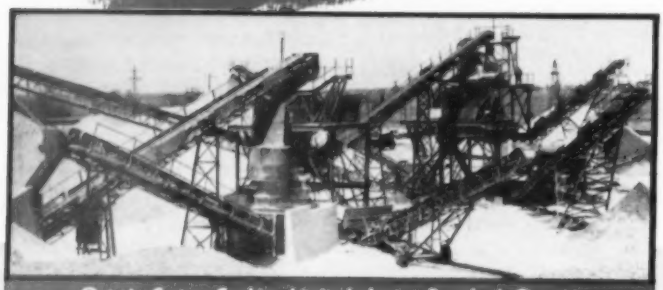
Also, since this controls only the employer who is involved in the labor dispute, it would appear to encourage having another employer make and pay for the investigation. The use of such subterfuges could, conceivably, further complicate labor relations.)

4. Any agreement or arrangement with a labor relations consultant or other independent contractor or organization pursuant to which such person undertakes activities with the object, directly or indirectly, to persuade employees to exercise or not to exercise, or persuade employees as to the manner of exercising, the right to organize and bargain collectively through representatives of their own choosing, or undertake to supply the employer with information concerning the activities of

(Continued on page 68)

Meets the most exacting specs...

TELSMITH®
DESIGNED AND EQUIPPED



Ontario Custom Crushing Limited plant at Brantford, Ontario.

With its Washing Tower recently expanded, with additional Telsmith equipment (see 1, 3 and 5 below), Ontario Custom Crushing Limited, Brantford, Ontario, plant can produce aggregate *to meet even the most exacting specifications.* It had already proved its efficiency, and capacity, making all wanted sizes for construction. Equipment was furnished by Ontario Equipment & Supply, Ltd., Telsmith distributor, Toronto. Send for Bulletin 292.

(Below) WASHING TOWER — (1) 84"x12' Super-Scrubber. (2) Two 5'x12' Triple Deck Vibro-King Sizing Screens. (3) 10'x20' Dewatering and Classifying Tank. (4) 24"x19' Twin Screw Sand Classifier. (5) 30"x22' Twin Screw Sand Classifier.

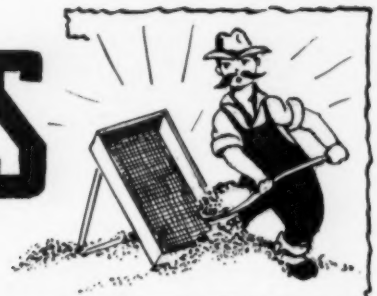
G-32-1059

SMITH ENGINEERING WORKS

504 E. CAPITOL DRIVE • **MILWAUKEE 1, WISCONSIN**

Representatives in Principal Cities in All Parts of the World • **Cable Address: Sengworks, Milwaukee**

SCREENINGS



By RAY L. SMITH JR.

ELSEWHERE in this issue our editors have struggled with the year-end chore of reporting on the performance of the pit and quarry industries, throwing in for good measure a few completely reckless prognostications concerning 1960. It was our thought to bang out a few predictions of a more general nature for the amazement of the readers of this department, but our heart really isn't in it.

A couple of empty heads suggested that we predict the identity and party affiliation of the next President.

If we were to pay heed to this suggestion, and publish our carefully-prepared revelations, a good many people might not even bother to go to the polls, and such abstentions might actually invalidate the whole basis for our prediction.

With chattering teeth, our Biology Department set out on an experiment perilous, object being to discover what really causes everyone to suffer such agonies when the temperature takes a nose dive.

The horrible results are in: Not one iota of proof was provided to the effect that the addition of alcohol will supply adequate anti-freeze protection.

Our vague notion that some special phenomenon would attend the arrival of the year 1960 has gone glimmering. People had hangovers, made resolutions, smashed automobiles, got born, and cashed in their chips with much the same abandon displayed on other New Years Days. So far as we could judge, the last decade, which spawned the first Republican president in 20 years, the Korean War, the cold war, jet air travel, and finally the Sputnik, sputtered out like a bum fire cracker.

Trying to reconcile the widely divergent predictions for 1960, is the sort of task you can't struggle with very long without finding yourself in complete agreement with the bloke who said that if all the economists (publishers, et al) were laid end to end, it would be a damned good idea.

Unfair Advantage

WE ARE a bit intrigued by a recent news item from Canada reporting that John Susin was fined fifty dollars for damaging a fifteen-ton bulldozer with his forty-ton bulldozer in a duel over ownership of a pile of sand at a construction site.

While we're on this gritty topic, we might as well unload another item containing this cryptic announcement: "Arabs often use sand instead of water for bathing." The fellow who ran down that item undoubtedly has what is called a nose for news.

And what about all those bath tubs we sent to the Arabs.

Potpourri and Succotash

A small town in a valley had quite a bit of rain one night forcing the townfolk to flee to one of the hills surrounding. In the morning as they looked down on their flooded homes, they noticed a straw hat floating downstream. As they watched the hat did a quick reverse and floated back upstream. As the hat repeatedly floated downstream and then back upstream, one of the townfolk commented on its strange behavior.

"I don't know about the straw hat," said a little boy, "but last night Grandpa said come hell or high water he was going to mow the lawn."

Young Harry: "Father, what's the difference between a gun and a machine gun?"

Dad: "There's a big difference. It's just as if I spoke and then your mother spoke."

Why grieve because your beautiful dreams haven't come true? Your nightmares haven't either.

By the time a man can afford to lose a golf ball, he can't hit it that far.

Teacher: "If your mother has a package delivered C.O.D., what do the initials stand for?"

Bright boy: "Call on Daddy."

Middle age is the time a guy starts turning out the lights for economical rather than romantic reasons.

A film star met a producer on a Hollywood boulevard.

Star: How's business?

Producer: It's stupendous, it's colossal, it's dynamic, it's unprecendented . . . it'll be better next week.

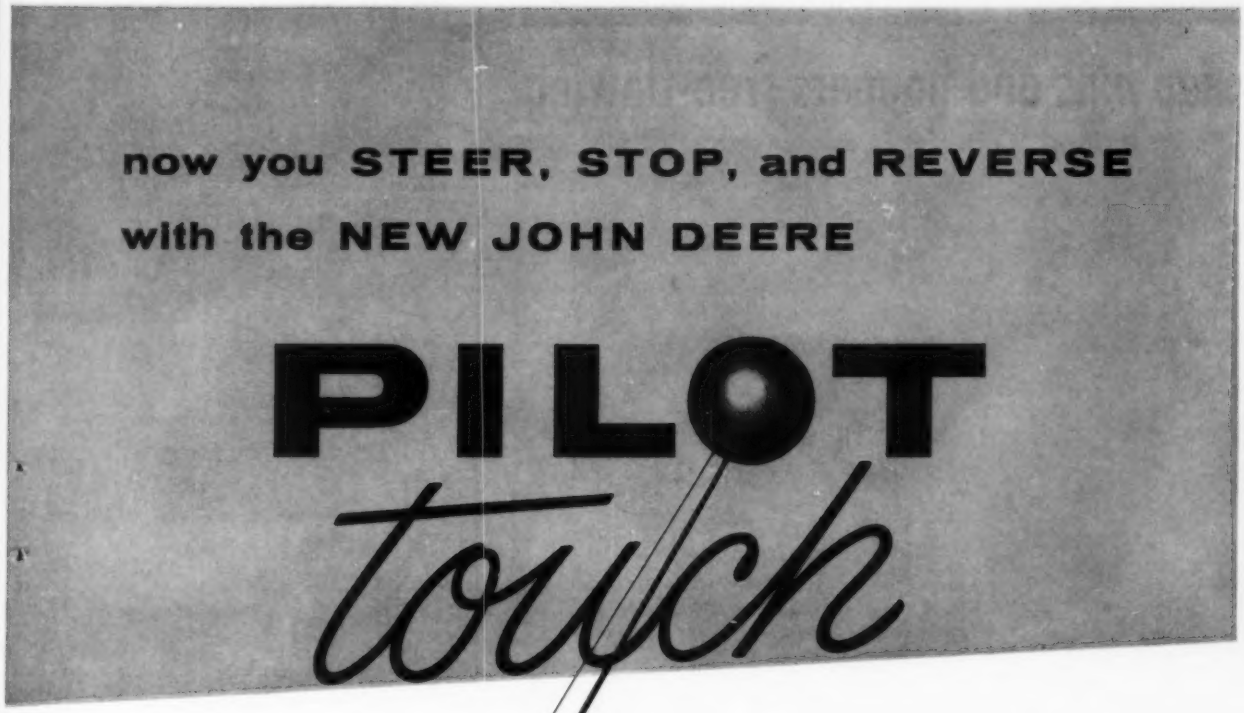
She never took a drink—afraid it might turn into would alcohol.

Two birds were sitting in their nest. One turned to the other and said, "Let's go out and put a deposit on a new car."

Did you hear about the little moron who cut a hole in the rug so he could see the floor show?

The drunk had long since had enough, but apparently didn't know it. "Aw, be reasonable, Bill," pleaded his friend, "why don't you take a taxi home?" Great tears welled up in the drunk's eyes and he sobbed, "Sh'no use, pally, sh'no use a-tall. Th' wife wou'n't lemme keep the poor li'l thing inna houshe."

"Look...the Steering Levers are Gone!"



the only Single Stick crawler control

Ease the stick forward, back, left or right—the way you want to go—and the John Deere Crawler obeys! Clutching is automatic—braking, too—so no footwork is required.

One-hand driving with hydraulic-powered Pilot-Touch keeps the operator fresh and alert—frees a hand for full-time control of loader, dozer, or other equipment. Payoff—a better job, and higher daily work production.

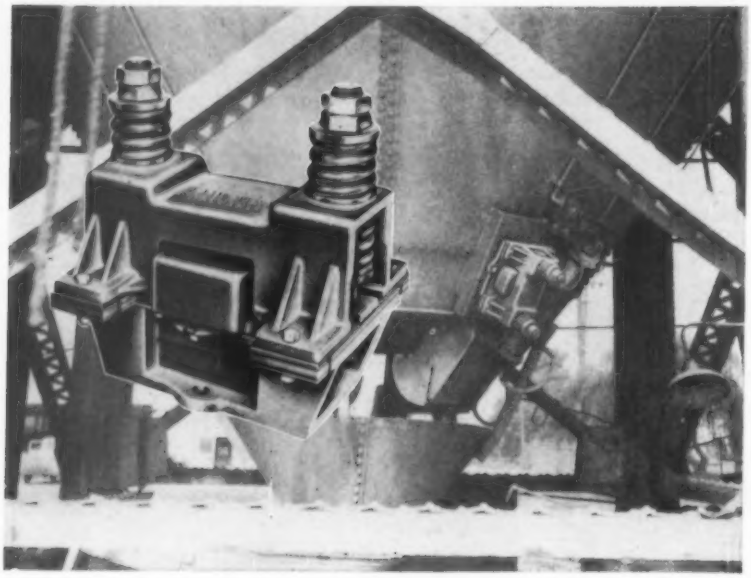
Pilot-Touch is an exclusive John Deere development, yours optionally on both Diesel and gasoline "440" crawlers. Your nearby John Deere Industrial Dealer soon will be demonstrating crawlers with this new hydraulic-powered control. See him or write us for complete details.

John Deere Industrial Division, Dept. 2045, Moline, Ill.

JOHN DEERE *"Specialists in Low-Cost Power with a Heavyweight Punch"*

SYNTRON cost-cutting equipment of proven dependable Quality

keep bins and hoppers free-flowing



SYNTRON

BIN VIBRATORS

. . . prevent arching and plugging of sand, aggregate, gravel and heavy stone in bins, hoppers and chutes—keep these materials flowing freely to process equipment.

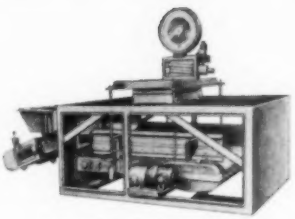
Simplicity of design assures dependability of operation and low maintenance. They are electromagnetic units that produce 3600 powerful, instantly controllable vibrations per minute. Enough vibration to move the most stubborn material.

SYNTRON Bin Vibrators provide the most efficient and effective method of keeping bulk materials free flowing. Eliminate equipment damage by hazardous pounding and rodding.

SYNTRON Bin Vibrators are available in a wide range of sizes. They are easy to install, easy to operate and easy to maintain. Eliminate production slow-downs caused by sticking and clogged bins.

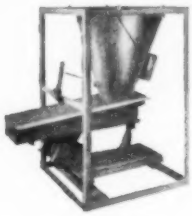
. . . write for complete informative literature today

Other SYNTRON Equipment of proven dependable Quality



GRAVIMETRIC FEEDERS

DRY FEEDER MACHINES



ROTARY VIBRATOR CAR SHAKERS

TEST SIEVE SHAKERS

VIBRATORY PACKERS

SYNTRON SINCE 1921

SYNTRON COMPANY

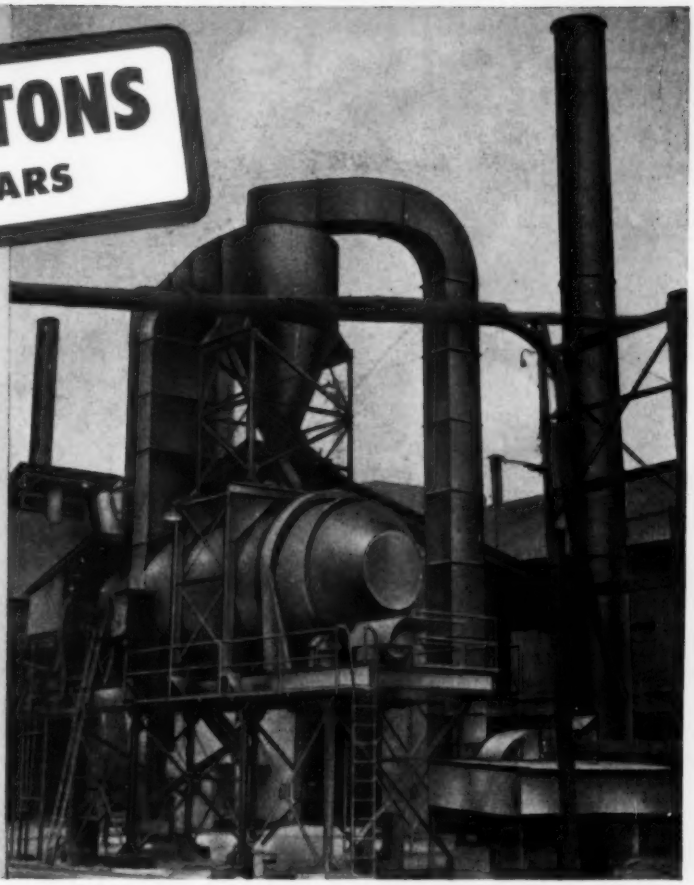
385 Carson Avenue **Homer City, Pa.**

Sales offices in principal cities in the United States and Canada—Agents in most foreign countries

1,500,000 TONS
DRIED IN 3 YEARS

in this

Simplicity DOUBLE SHELL Dryer



"This dryer is one of the best pieces of equipment we ever bought"

comments one of the top production executives of National Cement Company, Birmingham, Alabama.

Operated 24 hours a day, this compact Simplicity double shell dryer has dried around 500,000 tons each year for the past three years . . . 1,500,000 tons and still operating efficiently. How many single shell dryers have produced half this tonnage before they had to be replaced?

The Simplicity dryer was originally bought to supplement the production of their two single shell dryers. It soon proved that the one Simplicity double shell dryer did the whole job with less effort, far lower fuel cost and a maintenance cost of less than 3c a ton. The single shell dryers have now been on stand-by for three years.

This standard Simplicity double shell dryer outperforms custom units costing several times as much. It has proven itself in drying all types of mineral aggregates, crushed stone, slag, portland cement, silica sand, sand and gravel. This double shell dryer is noted for its fuel economy. The cold incoming material in the outer shell is partially dried by the heat that is normally wasted in a single shell dryer. This saves fuel and protects the dryer from the destructive effects of heat.

The furnace gases enter the Simplicity dryer around 2500°F. to 3000°F. Actual exhaust temperatures measured at Douglasville, Georgia, on a hot day in June 1959 was 180°F. The heat goes in the material and not in the air. That is why fuel savings are so dramatic . . . in many installations fuel savings alone will pay for the dryer in three years or less.

Detailed specifications sent on request.

DEPENDABLE

THE SIMPLICITY SYSTEM

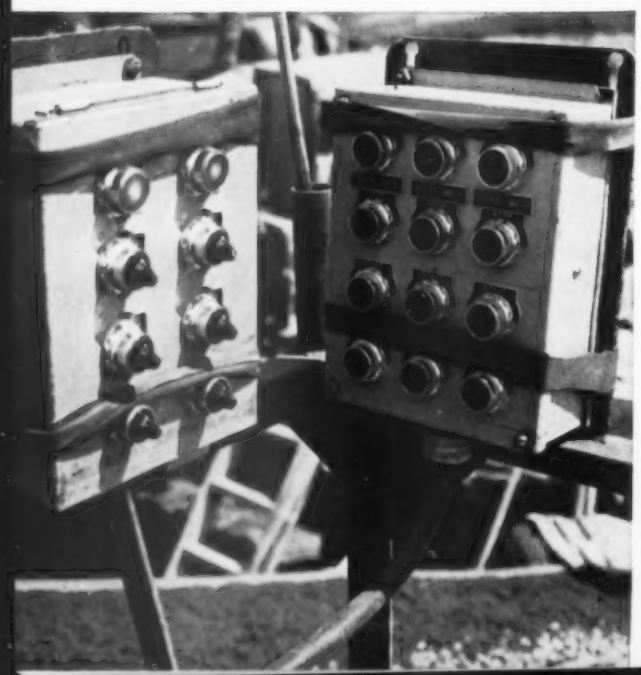
FROM BUILDER TO BUYER
BETWEEN MEN WHO KNOW

THE SIMPLICITY SYSTEM CO.

SHOLAR AVENUE PHONE MAdison 2-2144

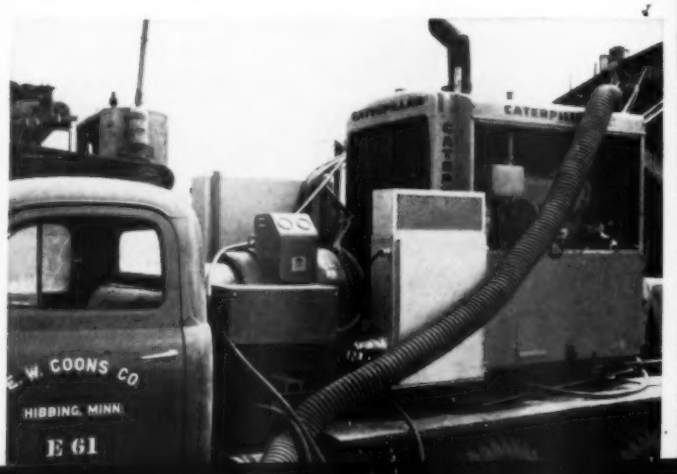
CHATTANOOGA 6, TENNESSEE

engine power
BY CATERPILLAR



From his post on the control deck, the operator sees each part of the plant. He doesn't have to leave his post to check anything.

Operation of the plant is simply a matter of pressing the right button at the right time. Action is instant. Controls are for feed, crushing and delivery.



Enter 20 on card, page 241

How much can you increase production with Cat "Two-Handed" Engines?

"CAT 'TWO-HANDED' D337 INCREASED OUTPUT BY 25%," REPORTS WERNER A. KOSKI, CRUSHER PLANT FOREMAN FOR E. W. COONS CO., INC.

How many more dollars a week would a 25% increase in your plant production mean to you? What value would you place on greater freedom from down time? And increased portability? A much simplified plant?

These are questions to answer when you consider converting from one kind of power—usually mechanical—to Cat "Two-Handed" Engines that give you mechanical and electrical power both. The advantage is this: *one* engine lets you choose the most efficient power for each of a variety of needs.

E. W. Coons Co., Inc., installed a Cat D337 "Two-Handed" Engine in mid-1958. The plant is a Pioneer Two-Unit Crushing and Screening Plant, driven direct through transmission. Power from a 75 KVA generator drives five 20 HP motors on screens and conveyors, as well as an electric welder. Production is 275 tons per hour—a 25% increase over past performance.

The "Two-Handed" Cat D337 is mounted on a truck, which increases portability, particularly for the crusher. Off-plant installation also removes the engine from much dust and vibration.

The operator controls production from a single push-button panel. Feed, crushing and delivery operations are always visible to him and under instant control. He starts and stops the delivery conveyor instantly, which provides an efficient guard against "giving away" aggregate. Variable speed on the conveyor makes it much easier to maintain flow which keeps vibrating screens packed full time, regardless of size, moisture content, or density of screened material.

Now might be an excellent time for you to look at your plant and its power. Check it with an eye to spotting hodgepodges of cross shafts, jack shafts, and other power transmitters. Take a look at your down time records and your fuel consumption costs. Ask yourself, too, just how portable *is* your portable plant? How much production do you miss with your present setup?

Then ask your Caterpillar Dealer to outline the kind of plant you'd have with a Cat "Two-Handed" Engine. He has an engine that will give you direct-from-the-flywheel mechanical drive, with a large-capacity front-mounted generator for your electrical load. He has nine basic Cat Engines up to 700 HP and 350 KW—plus all of the engineering data you need to plan the most profitable installation.

CATERPILLAR

Engine Division, Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

"Two-Handed" Cat D337 is mounted off-plant on a truck. Engine is away from plant vibration and escapes much of the dust. Truck mounting increases plant portability and versatility. This also has the advantage of simplifying over-the-road transportation.

Over-all view shows Pioneer Two-Unit Crushing and Screening Plant of E. W. Coons Co., Hibbing, Minn. In photo, plant is producing several grades of crushed gravel for subbase, shoulders and detours on construction of 10 miles of two-lane concrete paving on North Dakota No. 5 from Langdon to a point 10 miles east.

Ask a hard rock driller what he likes about a

TRACDRIL

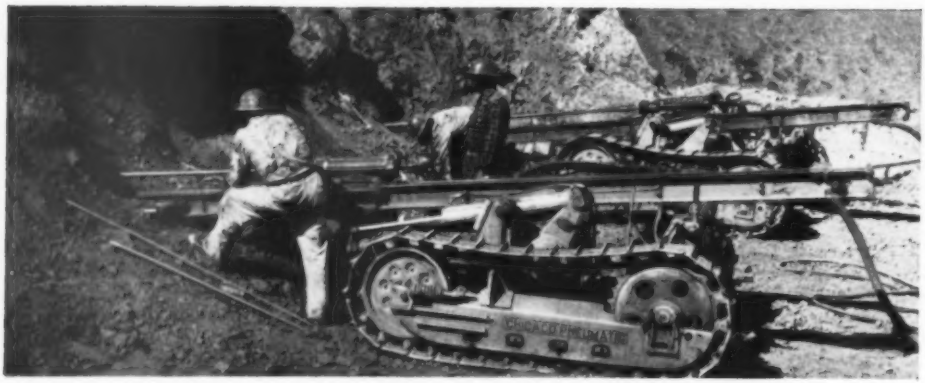
—He'll answer:

OPERATING EASE

and

SAFETY!

DRILLERS LIKE automatic brake on CP Tracdril that grabs and holds instantly when controls are released. Standing or drilling, the rig holds firm.



DRILLERS LIKE the way 6" channel constructed drill carriage provides rigid, steady mounting . . . eliminates distortion, resists crowding and prevents sag during horizontal operations. Feed always even. If steel breaks, drill will not plunge.

Here's "designed-in" safety. Release tramming motor throttle on CP Tracdril and multiple disc brake slams on instantly, automatically. No possibility of moving when rig is standing or drilling.

Dual control panels keep all hydraulic positioning levers within easy reach—drilling or tramming. U-Arm mounting lets operator convert fast from "hard high horizontals" to "snake holes". Two 6 HP "Power Vane" reversible motors give top tractive effort. Hard hitting CP-450DR Deep Hole Drill uses coupled drill steel, sinks 3-inch holes to 75 feet. Get complete information on Tracdrils from your CP equipment distributor, or write to *Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, N. Y.*

DRILLERS LIKE easy hole-spotting of CP Tracdril and the "deadman controls" insure operator safety. Drill moves ahead, backs, turns, pivots at a touch. Easily hauls 600 c.f.m. compressor up 10% grade.

Chicago Pneumatic

AIR COMPRESSORS • PNEUMATIC TOOLS • ROCK DRILLS • DIESEL ENGINES • ELECTRIC TOOLS • BLAST HOLE DRILLS • FUMPS • AIR-BLAST BITS

News of the Industry

500 T.P.H. Stone Plant, Greater Cement Output For Colonial Sand & Stone

In a move toward integrating its building materials business, Colonial Sand and Stone Company of New York City has under construction a 500-t.p.h. crushed stone plant near its Kingston, N. Y., cement plant. (The latter is operated by the Hudson Cement Corporation, a wholly-owned subsidiary.)

Currently Colonial purchases all its crushed stone, but the new facility will supply about 25 percent of the company's stone aggregate requirements.

Cement capacity is to be boosted to about two million bbl. a year, up from the current 900,000-bbl. output. Production at the higher rate is scheduled to begin next spring. This plant was completed late in 1958. Colonial had formerly purchased its cement.

N.S.G.A. and N.R.M.C.A. Move To New Washington Offices

Offices of the National Sand and Gravel Association, and of the National Ready Mixed Concrete Association were relocated during December, 1959.

The new address—the same for both associations—is 1411 K Street, N.W., Washington 5, D. C.

Fine-Size Flux Production Increased at Calcite Plant Of Mich. Limestone Div.

New facilities for increased production of fine-size limestone (fluxing fines) have been put into operation at the Calcite plant (Rogers City, Mich.) of Michigan Limestone Division, U. S. Steel Corporation. These fines partially replace large-lump flux stone normally used with natural raw ore in blast furnaces.

The new facilities at Calcite consist of an additional grinding mill, screens, and storage and materials-handling equipment. A similar plant expansion now under way at the division's Cedarville (Mich.) plant will be operating this spring.

Coming Events

January 18-21, 1960—Cincinnati, Ohio. 58th annual convention, American Road Builders Association. Netherland Hilton Hotel.

January 18-21, 1960—Washington, D.C. Board of Directors meeting and annual convention, National Limestone Institute, Inc. Statler-Hilton Hotel.

January 24-28, 1960—Chicago. Annual meeting, Associated Equipment Distributors. Conrad Hilton Hotel.

January 28-29, 1960—Roanoke, Va. Annual meeting, The Expanded Clay and Shale Association. Hotel Roanoke.

February 1-4, 1960 — Detroit. Fifth annual convention, National Bituminous Concrete Association, Inc. Sheraton-Cadillac Hotel.

February 1-5, 1960—Chicago. Committee Week, American Society for Testing Materials. Hotel Sherman.

February 15-19, 1960—Chicago. Combined biennial show, joint convention, National Sand and Gravel Association, and National Ready-Mixed Concrete Association. The Coliseum, and Conrad Hilton Hotel.

February 22-24, 1960—Chicago. 43rd annual convention, biennial manufacturers division exposition, National Crushed Stone Association. Conrad Hilton Hotel.

February 22-24 — Los Angeles. 40th annual convention, National Concrete Masonry Association. Hotel Statler.

March 14-17, 1960—New York City. 56th annual convention, American Concrete Institute. Commodore Hotel.

Oct., 1959, Building Total Lower than Oct., 1958— But Over September Mark

Construction contracts in the United States in October dropped 5 percent below the level of the corresponding month of 1958 to a total of $3,134,500,000, according to F. W. Dodge Corporation. It was the third month in a row that awards for future building fell below 1958 levels; but despite the drop, October contracts were the second-highest October and were up from the September value of $3,058,055,000.

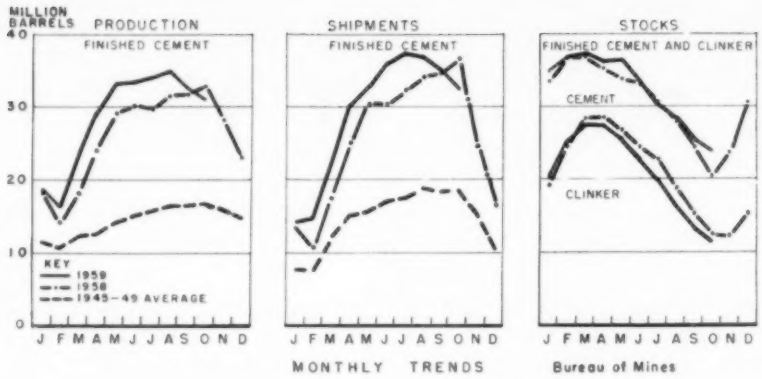
Declines in housing, highways, and schools contributed to the drop. Factory buildings, stores, and office buildings were higher. August and September drops were attributed to postponement of awards due to uncertainty of steel deliveries and prices. Plans to build new industrial plants have been picking up recently.

On a seasonally adjusted basis, some improvement was shown over the two previous months, as the Dodge index of construction contracts rose to 278 from 269 in September and 258 in August.

Items: residential building contracts in October were valued at $1,514,953,000—a decrease of 5 percent from October, 1958; heavy engineering construction amounted to $616,090,000—a decline of 19 percent; nonresidential building contracts totaled $1,003,457,000—an increase of 5 percent, with sharp gains in contracts for manufacturing and commercial buildings.

Cumulative totals for the first ten months of 1959 and the percentage changes from the corresponding period of last year: total construction, up 5 percent to $31,714,027,000; non-residential building, up 4 percent to $9,821,196,000; residential building, up 20 percent to $15,077,614,000; and heavy engineering, down 18 percent to $6,815,217,000.

The Sixth Joint Annual Convention of the Texas Aggregates Association and the Texas Ready Mixed Concrete Association will be held April 28-30, 1960, at the Hilton Hotel, El Paso, Tex.



— October, 1959, Finished Portland Cement —

SUMMARY—Production of finished portland cement in October, 1959, as reported to the U. S. Bureau of Mines totaled 31,127,000 barrels, a decrease of 5 percent compared with October, 1958. Mill shipments in October, 1959, totaled 32,282,000 barrels, a decrease of 12 percent, compared with October, 1958. Stocks of 23,912,000 barrels of finished portland cement on hand October 31, 1959, were 17 percent higher than those on hand October 31, 1958. Clinker production during October, 1959, totaled 29,588,000, a decrease of 1 percent compared with the October, 1958, figure.

PRODUCTION—One hundred and sixty-seven (167) plants in 38 states and Puerto Rico reported a production of 31,127,000 barrels of finished portland cement during October, 1959, compared with 32,847,000 barrels produced in October, 1958.

Production of clinker during October, 1959, was 29,588,000 barrels, compared with 29,905,000 barrels produced during the same month last year.

High-early-strength portland cement output in October, 1959, totaled 1,194,000 barrels, an increase of 16 percent over the October, 1958, production.

Prepared masonry cement production in October, 1959, of 1,361,000 barrels increased 3 percent over the October, 1958, production.

SHIPMENTS—Mill shipments of finished cement for October, 1959, totaled 32,282,000 barrels, compared with 36,615,000 barrels shipped in October, 1958.

In October, 1959, shipments were higher in 11 districts and lower in 12 districts than in October, 1958. The greatest increases were in the Alabama and Iowa districts. The greatest decreases were in the Indiana-Kentucky-Wisconsin, and western Pennsylvania-West Virginia districts.

Mill shipments of high-early-strength portland cement totaled 1,285,000 barrels, an increase of 0.4 percent over the 1,280,000 barrels shipped in October, 1958.

Mill shipments of prepared masonry cement in October, 1959, totaled 1,419,000 barrels, a decrease of 9 percent from the 1,565,000 barrels shipped in October, 1958. Over one-half of these shipments were from mills in the northern states east of the Mississippi River. Prepared masonry cements are shown in 376-lb. barrels although they are sold in barrels of varying weights.

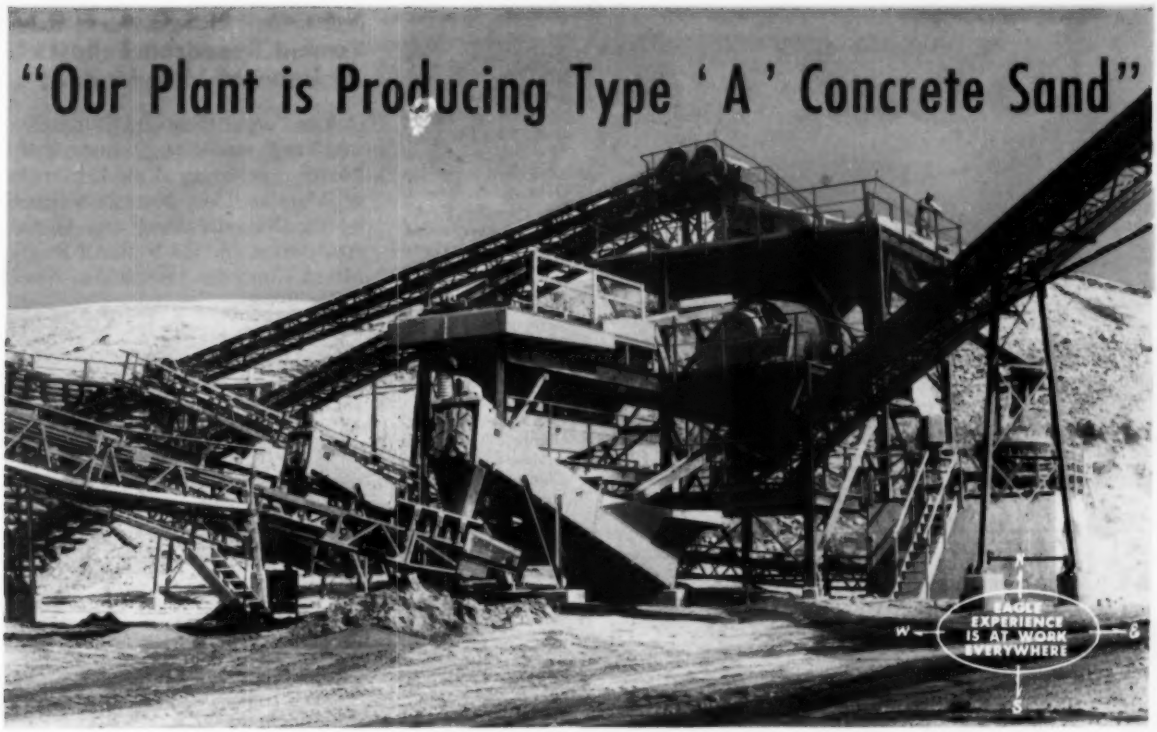
STOCKS—Mill stocks of 23,912,000 barrels of finished portland cement were on hand October 31, 1959, an increase of 17 percent over the 20,415,000 barrels on hand October 31, 1958. Stocks of clinker on hand October 31, 1959, totaled 11,618,000 barrels, a decrease of 7 percent from the 12,494,000 barrels on hand October 31, 1958.

FIRST TEN MONTHS OF 1959—For the January-October period, the volume of production of finished cement amounted to 288,316,000 barrels compared with 259,698,000 barrels in the comparable period of 1958. Total shipments for the first ten months of 1959 are reported at 292,683,000 barrels; in the same period of 1958 total shipments were 265,889,000 barrels. (These figures do not include finished cement used in the manufacture of prepared masonry cement, as follows: October, 1958—265,000 barrels; January-October, 1958—2,210,000 barrels; October, 1959—241,000 barrels; January-October, 1959—2,471,000 barrels.) ●

6-Mo. Federal Highway Aid Approaches $1,400,000,000

A total of 4,022 federal-aid highway construction contracts was awarded through the various state highway departments during the first six months of 1959, involving a total cost of approximately $1.4 billion, according to figures compiled by the U. S. Bureau of Public Roads. The contracts awarded in the first half of 1959 had an average cost of about $350,000. They varied from less than $25,000 up to about $10 million, with an equitable distribution throughout the entire range.

About half the total number of contracts were in the range below $100,000, well within the possibility of participation by small business enterprises, thus encouraging the development of the actual and potential capacity of small business.



reports Sullivan Highway Products Corp. Monticello, N.Y.

FRED STEIN, Plant Supt. of Sullivan Highway Products Corp's. Masten Lake plant in southern New York is very enthusiastic about the performance of the Eagle Washing-Classifying-Dehydrating Section at their plant. He reports that because of the simple and accurate control provided in the Eagle Equipment, it has been possible to maintain the exacting standards required by New York State Department of Public Works for concrete fine aggregate; with particular reference to gradation, and silt and loam content.

The easy-to-operate Eagle Section consists of a 20′ 2-cell water scalping-classifying tank with automatic bleeder valves and metering "splitter" gates which delivers classified material of correct water-sand ratio to two Eagle Fine Material Screw Washer-Classifier-Dehydrators for finishing. One is a 36″ dia. screw, the other 20″ dia. Both 25′ long.

These screw units are of latest Eagle design with ribbon in-feed for minimum turbulence and totally enclosed compound gear drive which runs in an oil bath and is sealed against water and dirt.

Eagle Experience and Service cannot be copied and down through the years this has made Eagle Equipment first in the industry. It is this Experience and Service that has aided producers over the years and helped so many to profit so well. If you produce aggregates surely Eagle can help you. Send for Catalog.

SINCE 1872

EIW

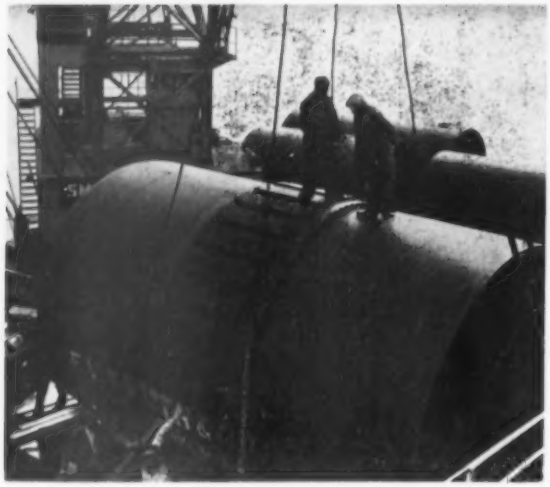
EAGLE IRON WORKS

EAGLE IRON WORKS

ENGINEERS • MANUFACTURERS

133 Holcomb Ave., Des Moines, Iowa

Factory-Trained Distributors Everywhere



● The first section of the 450- by 14½-ft. rotary cement kiln for Permanente Cement Company's new 1,700,000-bbl. plant near Honolulu left San Francisco in November, bound for Oahu Island, Hawaii. The "Hawaiian Pilot," pictured here, sailed with five sections lashed on deck. The shipment also included four dust collection units for the plant. Two more freighters were later utilized to carry the remaining ten kiln sections. The F. L. Smidth kiln was fabricated at the Napa, Calif., plant of Kaiser Steel Corporation.

A.S.T.M. Committee Week Set for Chicago, Feb. 1-5

Committee Week of the American Society for Testing Materials will be held in Chicago at the Hotel Sherman, February 1-5, 1960. About thirty of the society's main technical committees will hold some 350 meetings of subcommittees and working groups to prepare reports to be given at the A.S.T.M. annual meeting.

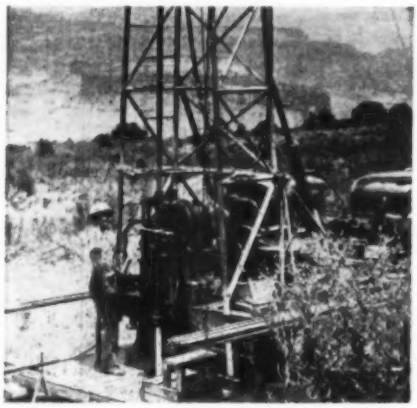
The Chicago District Council, under the chairmanship of S. H. Wallace (Badall Engineering and Manufacturing Co., Hammond, Ind.), is planning the Committee Week dinner and the social hour.

WHAT ARE YOUR RESERVES?

●

LET US HELP YOU FIND OUT

●



Coal in Kentucky . . . Uranium on the Colorado plateau . . . Bauxite in the Ozarks . . . Limestone in Pennsylvania . . . Copper in Montana . . . These are but a few examples of the extent of our operations. Throughout the United States and even in many foreign countries we have successfully explored and proved ore reserves for our many customers, and where normal methods have failed, special techniques have been developed. In the Gas Hills Area of Wyoming, for example, we successfully cored the loose sand and siltstone where others had failed by "freezing" the material. Our personnel and equipment are stationed throughout the United States awaiting your call.

SPRAGUE & HENWOOD, Inc.
SCRANTON 2, PA.

S&H

New York—Philadelphia—Atlanta—Pittsburgh—Grand Junction, Colo.—Buchans, N.F.

Enter 26 on card, page 241

N.S.G.A.-N.R.M.C.A. Fund To Aid Research Fellows At Univ. of Maryland

A research fellowship foundation which will subsidize graduate study in civil engineering at the University of Maryland has been established by the National Sand and Gravel Association and the National Ready Mixed Concrete Association. Since 1939 these associations have supported a joint research laboratory at the university under the direction of Stanton Walker, director of engineering for both organizations.

The foundation has been established in the university's department of civil engineering to promote basic research into the properties of mineral aggregates and concrete and to study problems related to the sand and gravel and ready mixed concrete industries.

Fellowships will be awarded to selected civil engineering graduates having outstanding undergraduate records, who have been approved for admission to the university's graduate school.

Fellows will be appointed for one year; and reappointment for an additional year is possible. Each fellow will receive a stipend of $2,000 plus tuition and other perquisites.

Applications for the fellowships for 1960-61 should be made immediately by applying to Dr. C. T. G. Looney, Department of Civil Engineering, University of Maryland, College Park, Md.

Two Asbestos Mills Scheduled For Northern California

Spokesmen for Clute Corporation, a Littleton, Colo., holding company, recently disclosed plans for a 1,000-t.p.d. asbestos mill to be built 14 miles northeast of Napa, Calif. Facilities are expected to cost more than $1 million, and will be located on 200 acres recently acquired through the purchase of Asbestos Bonding Corporation. The site is described as "the largest known asbestos deposit in the United States."

The Jefferson-Lake Sulphur Company's 2,000-t.p.d. asbestos mill announced for nearby Stockton, Calif. (see PIT AND QUARRY, December, 1959, p. 30), will be erected at a cost of approximately $5 million.

Rumford Named President Of Standard Lime-Cement In Executive Realignment

Lewis Rumford II, former executive vice-president of Standard Lime and Cement Company, was named president of the Baltimore-based division of American-Marietta Com-

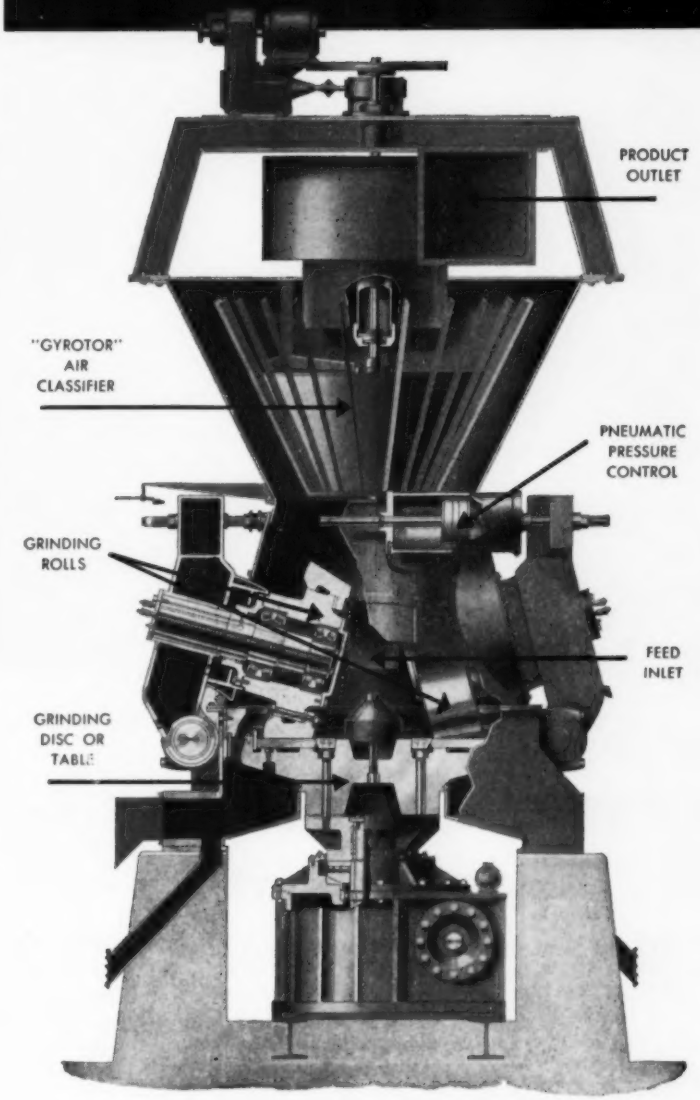
Lewis Rumford II

pany in a recent extensive series of appointments and promotions. Walter L. Specht succeeded to the post of executive vice-president.

Other appointments were as follows: W. D. Garvin—vice-president, operations; L. J. Mueller—assistant vice-president, operations; W. L. Tribull—vice-president, industrial sales; R. J. Troja—vice-president, building materials sales; J. A. Kirk Jr.—vice-president, traffic; S. C. Magersupp — secretary - treasurer; G. B. Phillips—general superintendent; J. B. Gillenwater—assistant general superintendent; U. G. Potts —assistant general superintendent; J. R. Harman—superintendent of maintenance of equipment; and K. D. Simmons—Martinsburg plant superintendent.

Each of these men has been identified with Standard Lime and Cement for many years. The company is a major supplier of cement in the middle Atlantic area and a major producer of high-calcium chemical lime, and refractory and fluxing materials for the steel industry.

DISC-ROLL MILL



The Hardinge Disc-Roll Mill is applied to dry grinding of minerals such as talc, limestone, coal, phosphate rock, bauxite, clays, celestite, and gypsum. The Disc-Roll Mill incorporates pneumatic roll-loading. Since the pressure on the rolls can be released or increased at will, complete flexibility of operation results. The problem of over-loading is eliminated. Also, the Hardinge "Gyrotor" Classifier is standard equipment on the Disc-Roll Mill. This classifier provides very close control of the finished product over a wide range of sizes. Ask for Bulletin 52-8.

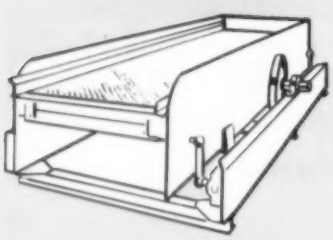
HARDINGE
COMPANY, INCORPORATED
YORK, PENNSYLVANIA • 240 ARCH ST. • Main Office and Works
New York • Toronto • Chicago • Hibbing • Houston • Salt Lake City • San Francisco • Birmingham • Jacksonville Beach
Enter 27 on card, page 241

get profit insurance . . . with "TIME-CONSCIOUS" SECO SCREENS in your plant

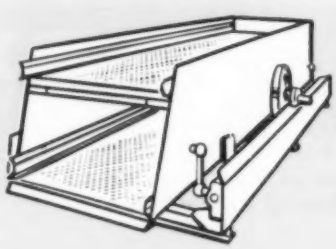
Yes, it's good to see the truckloads weighing out . . . BUT BACK OF EACH TRUCKLOAD IS YOUR COST OF PRODUCTION. THIS IS WHERE YOU MAKE OR BREAK YOUR PROFITS! Take a fresh look at your plant . . . and especially your screens before you start up for the 60's. If you're not set to get high production of accurately sized materials to meet today's strict specs . . . then you are going to be running "out of the money". If your screens can't stand the gaff of peak season production requirements, down time will syphon off the cream of your profits. TAKE A GOOD LOOK, RIGHT NOW! IF YOU NEED NEW OR REPLACEMENT SCREENS CONTACT SECO. OUR WHOLE BUSINESS IS TO PROVIDE OPERATORS WITH SCREENS THAT TAKE THE GUESSWORK OUT OF MAKING PROFITS . . . BECAUSE THEY PRODUCE HIGH TONNAGES OF ACCURATELY SIZED MATERIALS HOUR AFTER HOUR, YEAR AFTER YEAR, WITHOUT A WHIMPER. ASK ANY SECO OPERATOR!

See us at our Booth No. 1 Sand and Gravel Convention, Chicago, February 15-19
Booth No. 29 Crushed Stone Convention, Chicago, February 22-24

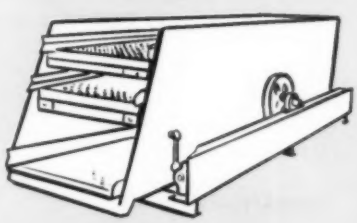
SINGLE DECK



DOUBLE DECK



TRIPLE DECK



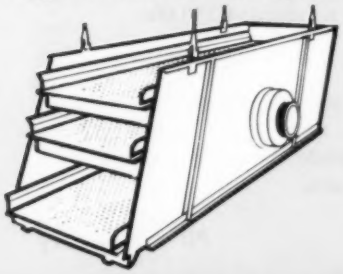
SECO

"TIME CONSCIOUS" VIBRATING SCREENS

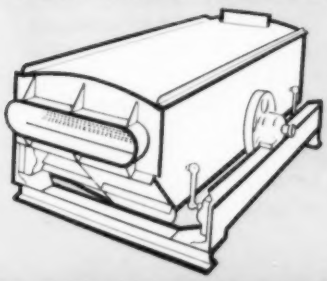
OVER 450 MODELS • FOR SCREENING EVERYTHING
FROM AG-LIME TO RIP-RAP • ALL BACKED
BY SECO QUARTER CENTURY OF DEPENDABLE,
HIGH VOLUME, LOW MAINTENANCE PERFORMANCE
ON TOUGH SCREENING JOBS COAST TO COAST
SEND FOR FREE LITERATURE
SECO 4-BEARING SCREEN CATALOG #204
SECO TWIN BEARING SCREEN BOOKLET TB-21

SCREEN EQUIPMENT COMPANY, INC.
Buffalo 25, New York

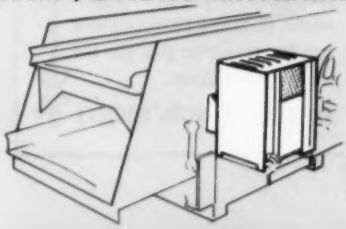
1½, 2½ and 3½ DECKS



DUST HOUSED MODELS



FACTORY INSTALLED ELECTRIC HEATERS FOR DAMP, STICKY MATERIALS



1,500,000-Bbl. Cement Plant Of Columbia-Southern Opened at Barberton, Ohio

Columbia-Southern Chemical Corporation has opened its new multimillion-dollar 1,500,000-bbl. cement plant at Barberton Ohio. The plant is said to be an almost completely automatic operation.

A fully automatic dust-control system is utilized; both ball mill circuits are equipped with automatic proportioning feed controls to insure maximum efficiency and quality control; and a pushbutton-controlled loading system faciliates handling bulk shipments by rail or truck.

The rotary kiln is 460 ft. long and 13 ft. in diameter. Limestone is obtained from the firm's nearby mine; material too small for the chemical corporation's glass-making soda ash operation can be used in cement.

Barberton cement will be marketed by the newly formed subsidiary, Columbia Cement Corporation. (See news story on page 32.)

ALPHA
A
CEMENTS

The bold new Alpha "A" trademark (above) is the second trademark registered by Alpha since the company was organized in 1895. The original insigne (right), adapted from a seal used on the ends of wooden cement barrels, was discontinued by the firm many years ago. (See story below.)

CANCER'S DANGER SIGNALS CAN BE SAFETY SIGNALS

You can do two things to guard yourself against cancer: Have an annual health checkup. Alert yourself to the seven danger signals that could mean cancer: 1. Unusual bleeding or discharge. 2. A lump or thickening in the breast or elsewhere. 3. A sore that does not heal. 4. Change in bowel or bladder habits. 5. Hoarseness or cough. 6. Indigestion or difficulty in swallowing. 7. Change in a wart or mole. If your signal lasts longer than two weeks, go to your physician. Give him the chance to give you the chance of a lifetime.

AMERICAN CANCER SOCIETY ®

Alpha Portland Cement Co. Selects New "A" Symbol

A new trademark has been adopted and registered with the U. S. Patent Office by Alpha Portland Cement Company of Easton, Pa. (See accompanying box.) It is already being used on cement bags, stationery, literature, and advertising.

The broad bold letters of the symbol were chosen for their clean, modern look, and because they suggest the massiveness of a construction industry. The "A" is also being used as the first letter in the new corporate signature. Registration of the trademark culminates a long search by management for a suitable new corporate symbol.

Seattle Sand and Gravel Firm Sold To Lone Star Cement

The Pioneer Sand and Gravel Company, Seattle, Wash., one of the Northwest's largest building material companies, has been purchased by Lone Star Cement Corporation. The 52-year-old firm—formed by a merger of Martin Gravel Company, the Independent Asphalt Paving Company, and the Seattle Sand and Gravel Company—handled more than 1,000,000 cu. yd. of sand and gravel during 1958, and had sales totaling $6,000,000.

Gordon N. Scott, president of Pioneer, will continue in that office. K. A. Stotler, V. C. Tjossem, and C. L. Golding, vice-presidents, and other personnel will also continue in their present capacities. No change is contemplated in the name of the company or its policies.

Pioneer operates four plants in Seattle, producing crushed gravel, dry-batched aggregates, industrial sand and gravel, and ready mixed concrete.

Wallace & Associates Plant Has 300-T.P.H. Gypsum Output

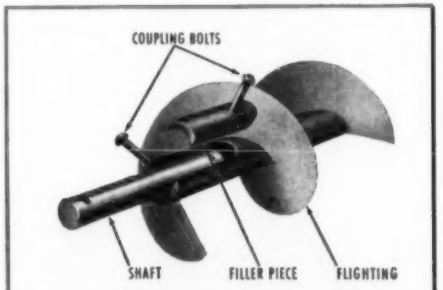
Now conservatively rated at 300-t.p.h. capacity, the Mendota gypsum plant of James A. Wallace and Associates is supplying gypsum for alkali correction of farm lands in Fresno County, Calif. The operation is located southwest of Fresno. It was opened as a small-capacity operation about a year ago.

Much of the gypsum shipped from the Mendota deposit is being sold as 40 percent plus in its purity ratings, the lowest shipping grade, although considerable high-grade product (ranked at 60 percent plus in its unmilled form) is being sold raw. A 52-ft. long battery of four sets of screens is used. Overburden ranging from 3 to 5 ft. deep is stripped by bulldozers. Plant equipment is valued at 250,000.

A note to remember, from *Lehigh News Conveyor*: If you want to be self-made, don't leave out the working parts.

How Quik-Link conveyor screws

KNOCK DOWN DOWNTIME



HOW IT WORKS — First, coupling bolts and filler pieces are removed from each end of screw section to be replaced. Then the hanger is unbolted, and entire section lifted from trough.

Only LINK-BELT Quik-Link lets you remove a single section without disturbing other components

Here's how you can side-step a serious production bottleneck. Quik-Link offers the fastest method yet of replacing a damaged screw and putting the conveyor back into service. Just a fraction of the normal time.

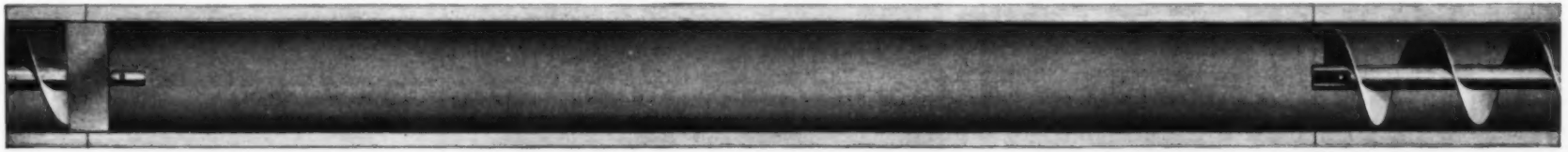
That's why it's time you investigated the "downtime insurance" built into every section of Link-Belt Quik-Link conveyor screws. Your maintenance men become quick-change artists in no time—a wrench and 30 minutes change the damaged screw section and put the conveyor back to work. What's more, there is no need to pull down the entire line . . . no need to disturb other conveyor components.

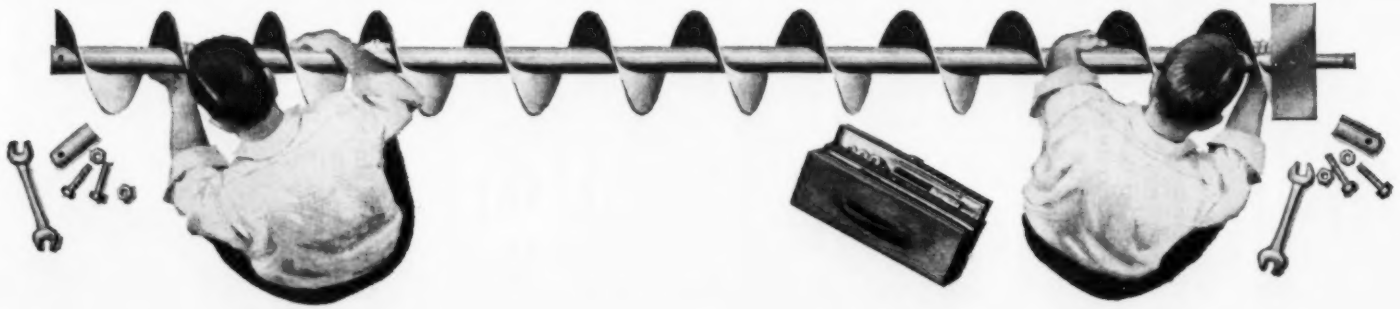
Quik-Link is just one of a whole group of Link-Belt screw conveyor components that are cutting maintenance and power requirements to the bone. For full facts call your nearest Link-Belt office or authorized stock-carrying distributor. Or write for Book 2989.

LINK-BELT

SCREW CONVEYORS 15,230

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Warehouses, District Sales Offices and Stock Carrying Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World.





Enter 31 on card, page 241

U.S. Construction Costs Show 2 Percent Increase From March to Sept., 1959

Construction costs in the United States (excluding Alaska and Hawaii) rose 2 percent between March and September, 1959, according to F. W. Dodge Corporation, construction news and marketing specialists. This 2 percent increase is an average figure based on building material prices and hourly wage data received from 144 metropolitan areas throughout the country, together with other elements of cost such as design, taxes, insurance, money, and competitive conditions.

Building costs now average about 2.57 times the 1941 costs. Generally, it takes $2.57 to buy and assemble as much building material as $1.00 did 18 years ago. This means that the 1941 building dollar has shrunk at an annual average rate of 3.4 cents in purchasing power; it's now worth only 39 of the original 100 cents.

Labor costs at the site of construction rose more than material costs. In the 6-month period, building material prices to builders in contractors' quantities were stable in 72 of the reporting areas, decreased slightly in 22 areas, and rose modestly in 50 areas. Labor costs rose in 129 areas, remained unchanged in 10, and decreased slightly in 5 weakly organized areas.

The total construction costs (base hourly wage rates plus material prices) increased in 116 of the areas, remained unchanged in 18, and decreased in 10.

Columbia Southern Division Becomes Firm's Subsidiary

Columbia Cement Corporation has been formed as a wholly-owned subsidiary of Pittsburgh-based Columbia-Southern Chemical Corporation (itself a subsidiary of Pittsburgh Plate Glass Company).

The Zanesville, Ohio, 2,100,000-bbl. plant formerly owned and operated by Columbia-Southern Chemical Corporation's Cement Division will now be owned and operated by Columbia Cement Corporation. It will also market the cement produced at the parent firm's newly-opened 1,500,000-bbl. plant at Barberton, Ohio. (See news item on page 30.)

Directors of the new corporation are: E. T. Asplundh, chairman; David G. Hill, J. A. Neubauer, C. F. Bingham, J. E. Burrell, and J. T. Owens. The board appointed the following officers: J. A. Neubauer, president; W. K. Farst, vice-president, operations; W. B. Sippey, vice-president, sales; L. S. Williams, controller; E. H. Eaton, treasurer; and J. T. Owens, secretary.

Next C.I.M.A. Road Show Scheduled for February, 1963

The next Construction Industry Manufacturers Association sponsored Road Show will be held during February, 1963, according to a final decision made by the C.I.M.A. board of directors at a meeting in December of last year.

The exact February dates, location, and particular details of the show will be announced after the C.I.M.A. annual membership meeting, which will be held in Cincinnati on January 18, 1960.

5 Industry Executives Named To P.C.A. Board of Directors

Five new members were elected to the board of directors of the Portland Cement Association at its recent annual meeting in Chicago.

The new directors are: Chester S. Crawford, president, Whitehall Cement Mfg. Co.; L. R. Forbrich, general manager, Green Bag Cement Div., Pittsburgh Coke and Chemical Co.; Ellroy King, president, Halliburton Portland Cement Co.; Frank B. Warren, president, Bessemer Limestone and Cement Co.; and W. S. Ziegler, president, Saskatchewan Cement Co., Ltd.

Retiring directors are: Albert M. Andreas, chairman of the board, North American Cement Corp.; B. F. Cox, vice-president and general manager, British Columbia Cement Co., Ltd.; C. T. Fuller, chairman of the board, Allentown Portland Cement Co.; and L. T. Welshans, general manager, Standard Portland Cement Div., Diamond Alkali Co.

Construction Put in Place Drops 5 Percent in Oct.—But Beats Oct., '58, Total

The value of new construction put in place in October amounted to $4,800,000,000, according to preliminary estimates of the U. S. Department of Commerce. This was a decrease of about 5 percent from the September level, which is more than the normal change from September to October. However, the October, 1959, total is 1 percent above October, 1958.

Both private and public construction shared in this more than seasonal decline. The value of private construction in October was $3,400,000,000, down about 4 percent to $2,000,000,000. Compared to expenditures in 1958, total private construction expenditures were up 7 percent in October, 1959, almost completely because of a rise of 13 percent in expenditures for private residential construction. Public construction expenditures in October were $1,400,000,000, an over-the-month decline of 7 percent, and a decline of 13 percent from the October, 1958, level.

Construction expenditures in the first 10 months of 1959 totaled $45,700,000,000, an increase of 13 percent over the comparable period in 1958. Private expenditures for the first 10 months were $31,900,000,000, up 15 percent from 1958. Private residential expenditures accounted for $18,700,000,000 in the first 10 months of 1959, an increase of 28 percent over 1958. Public expenditures through October, 1959, were $13,800,000,000, an 8 percent rise from the 1958 10 month total.

The physical volume of new construction put in place in the first 9 months of 1959 is estimated to be $29 billion, 12 percent above the volume for the corresponding 1958 period, as measured in 1947-49 prices.

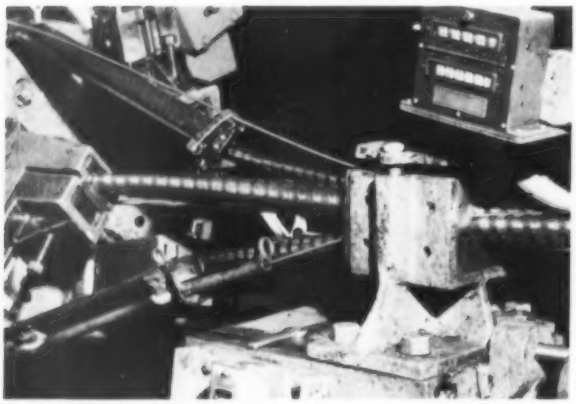
A deed conveying 31.35 acres of land in Lehigh County, Pa., from the Lehigh Portland Cement Company to the congregation of St. John's Lutheran Church of Mickleys, Fla., was placed on record recently.

Enter 33 on card, page 241 →

WHAT'S THE DIFFERENCE IN ELECTRICAL WIRE AND CABLE?

You'll find the difference in

Research and development. American Steel & Wire maintains a large staff of fully qualified engineers whose objective is to improve existing products and develop new ones. This is the key to a successful research program.



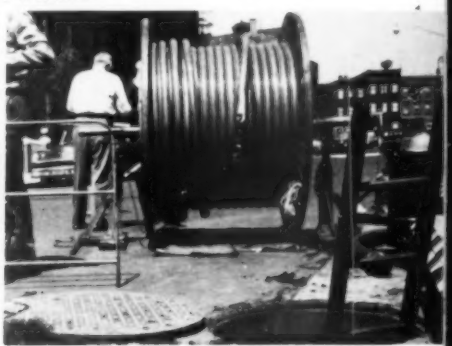
Design Engineering. Cable design is an art in itself requiring ability to combine electrical and mechanical elements to withstand all the destructive forces encountered in service.

Quality Control. From conductor to jacket, every step of manufacture is carefully controlled to make sure you receive the best Tiger Brand Cable for your particular application.

Specially engineered USS Tiger Brand Electrical Cables

For mining machines. Amerclad cables that provide long service in spite of bending, twisting and general hard usage.

For shovels. Cables that operate continuously under the most adverse conditions of weather and abrasion.



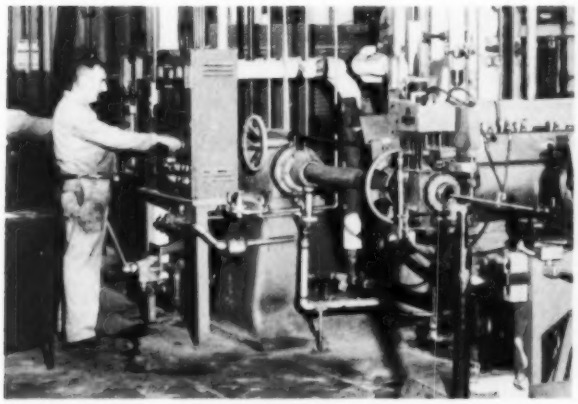
For city power systems. Lead-covered, gas-filled, paper cables for reliable service.

USS Tiger Brand—here's why!

For more than 68 years, American Steel & Wire has been producing the finest quality electrical wire and cable. In this period, we have constantly aimed to improve materials, develop better constructions and use the best cable manufacturing processes. We have two good reasons for doing this; first, our customers demand the most reliable cable they can get, and second, they want the advantages of the latest developments in research, design and engineering.

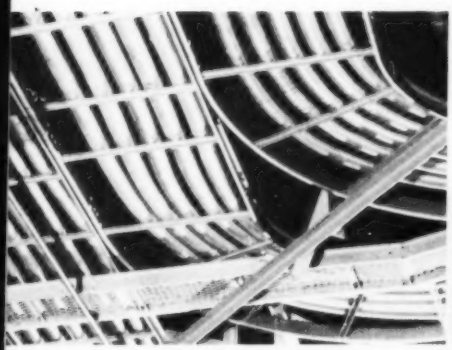
The differences in electrical cable are seldom visible at a glance. They show up, for example, in mining machine cable that absorbs shock and vibration, withstands crushing weights, and severe abrasion for unbelievably long periods. Or they appear in a new irradiated polyethylene cable designed for extra-high resistance to heat and moisture . . . in submarine cables that work under water for 30 or 40 years . . . in power cables that resist corona cutting.

In USS Tiger Brand Cables, you reap the advantages of all the research, engineering skill and manufacturing experience gained in making every type of cable from the smallest control cable to the largest dredge cable. There is a difference in cable—and you'll find it by using Tiger Brand.



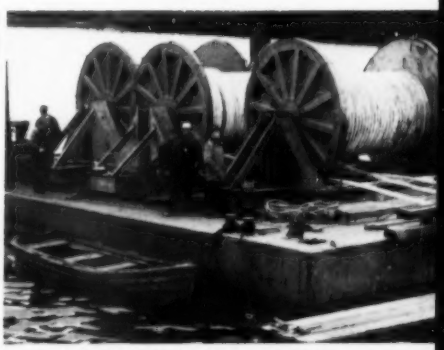
Modern Production Equipment. This new and up-to-date continuous vulcanizer is just one of the many new pieces of precision equipment that result in uniform high quality of USS Tiger Brand Electrical Cables.

Field Engineering. Where specific problems are encountered, our field service engineers are available to help you choose the right cable for the job or to suggest different constructions to obtain better service.



For industrial plants. Armorlokt armored cables eliminate conduit, reduce installation costs.

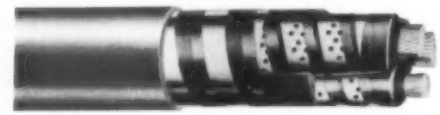
For highway lighting. Type RR power cable resists soil acids in direct burial.



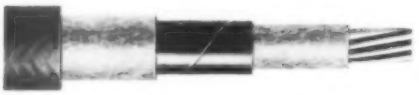
For underwater use. Armored submarine cable supplies dependable power for years.

(more on next page)

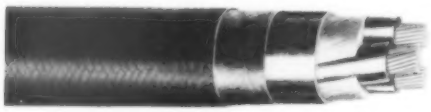
Quick facts on USS Tiger Brand Electrical Cables



Tiger Brand Paper Cable—Premium quality cable for high voltage use. Regular copper-bearing lead or tellurium lead sheaths available—both protected during manufacture by blanket of inert gas to prevent formation of oxides. All constructions available including neoprene (glass-reinforced) and plastic sheaths.

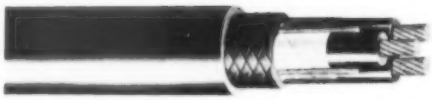


Tiger Brand Asbestos Cable — Cotton or asbestos braids, lead sheaths or interlocked armor coverings furnished. Available in asbestos or asbestos varnished cambric construction also in the new Type IPE (irradiated polyethylene) construction for extra high resistance to heat and moisture.

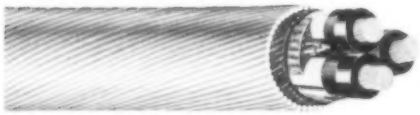


Tiger Brand Varnished Cambric Cable—Furnished in braided coverings (for dry installations), lead sheaths (for underground distribution), or armored coverings (for exposed work). Versatile, dependable, rugged, and economical "work horse" of standard insulations.

Tiger Brand RR Cable—Rubber-insulated neoprene sheath. A versatile cable for control and power applications. Both "conduit and duct" or "direct burial" (heavy jacket) types are available. Many constructions, including self-supporting aerial cable, can be furnished.



Tiger Brand Amerclad—The very highest quality in heavy-duty portable cords and cables. All jackets are vulcanized in a lead sheath, and are permanently marked with molded identifications. Over-all neoprene jackets show phenomenal resistance to abuse, sunlight, grease, oil or acid mine water.



Tiger Brand Submarine Cable—Special marine insulation, used on leadless armored cables, has over 40 years of proven operation in all types of underwater service. American Steel & Wire pioneered the use of aluminum armor for salt water installation.

Tiger Brand Interlocked Armor Cable — Aluminum, bronze, galvanized or stainless steel armor furnished over any type of insulated core. Features higher current carrying capacity (cable in free air), ease of installation and maintenance, and space saving. Rubber or varnished cambric insulations are standard.

Tiger Brand Elevator Cable—Carefully designed to insure the right amount of flexibility for smooth, straight trailing. Annunciator, control, signal, or lighting cables with braid or neoprene covers can be furnished, with steel supporting strand added for high-rise elevators.

For more detailed information, get in touch with American Steel & Wire, 614 Superior Ave., N.W., Cleveland 13, Ohio.

USS, Tiger Brand, Amerclad, and Armorlokt are registered trademarks

American Steel & Wire Division of United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors
United States Steel Export Company, Distributors Abroad

Metals-Minerals Meeting In Los Angeles, Apr. 21-22 To Be Arranged by A.I.M.E.

The next Southwest Metals and Minerals Conference will be held on April 21 and 22 at the Ambassador Hotel, Los Angeles. The meeting will be sponsored by the American Institute of Mining, Metallurgical and Petroleum Engineers.

Dr. Joseph L. Gillson is scheduled as the speaker to deliver the welcoming address at the first session. During a rock products symposium papers will be presented on geology, the history of the Los Angeles basin, zoning problems, special aggregates, transportation, and standardization of specifications.

At the mining session on industrial minerals speakers will present papers on roofing granules, stone, talc, soda ash, and cement.

1,100,000-Bbl. Expansion Set for Penn-Dixie Plant

Plans have been announced for a major expansion of the Penn-Dixie Cement Corporation's plant at Clinchfield, Ga., which will virtually double its capacity. The addition, when completed in the fall of 1960, will increase the plant's annual capacity by 1,100,000 bbl. to a total of 2,300,000 bbl.

A 450-ft. by 11½-ft. kiln, as well as related grinding and auxiliary equipment, will be installed. New facilities will also be built at the plant-site to provide additional storage capacity for 150,000 bbl. of cement. The increased output is aimed at Penn-Dixie's markets in Georgia and northern Florida.

Present annual capacity of the firm's ten plants is 16,770,000 bbl. The Clinchfield expansion will up total annual capacity to 17,870,000 bbl.

Clean Plant Operation Aids To Star in Maintenance Show

The Plant Maintenance and Engineering Show will return to the eastern part of the United States in 1960 for the first time in four years. It will feature a new exhibit of devices and equipment for eliminating factory pollution of air and water.

The four-day show will be held at Convention Hall, Philadelphia, January 25 to 28, and the concurrent conference during the first three days, January 25 to 27. Virtually all exhibits will emphasize cost reduction through preventive maintenance.

Recently installed fine-grinding facilities at the Black White Limestone Company, Quincy, Ill., are now being used in production of "diluent," a specially treated powdered limestone. Construction recently began on a roller mill installation to increase output of finely ground calcium carbonate.

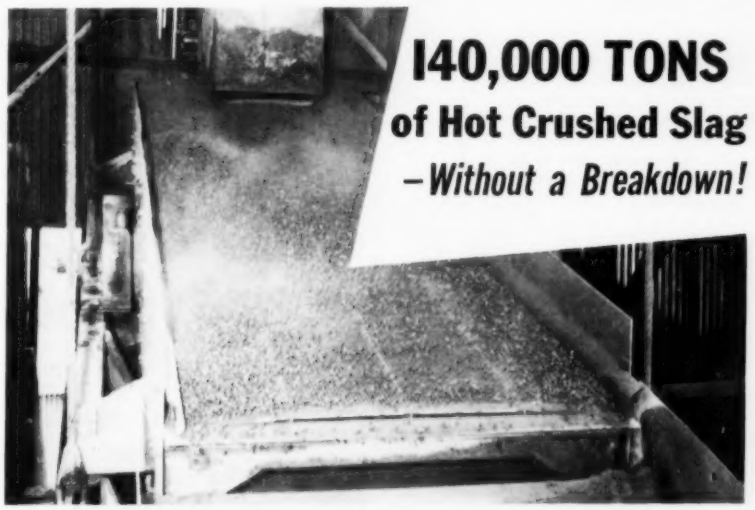
A $10,000,000 plant will be built by National Gypsum Company of Buffalo, N. Y., near Coyote Wells, Calif., for the manufacture of gypsum wallboard, lath, sheathing and plaster.

National Lime Association To Make Annual Awards For Best Technical Paper

An annual award of $1,000 will be given by the National Lime Association for the best technical paper on lime. This competition, to be known as the Victor J. Azbe Lime Award Contest, was made possible by Victor J. Azbe, president of the Azbe Engineering Corporation, Clayton, Mo., who has been a consulting engineer specializing in lime manufacturing problems and plant design for 40 years. The first award will be made in the fall of 1960.

Technical topics possible for the paper are as follows: lime manufacture, including plant or equipment design; research on the chemical and physical properties of lime; and methods of tests for evaluating its properties and quality.

All technical papers should be submitted by March, 1960, to the Administrator of the Victor J. Azbe Lime Contest, National Lime Association, 925 15th St., N.W., Washington 5, D.C.



140,000 TONS
of Hot Crushed Slag
–Without a Breakdown!

WITH CLEVELAND "CLELOY" SCREEN SECTIONS

● With results like this a leading Midwestern slag plant saved money over a five-day week, 11-month period using a screen engineered to their requirements by Cleveland Wire Cloth and Manufacturing Co.

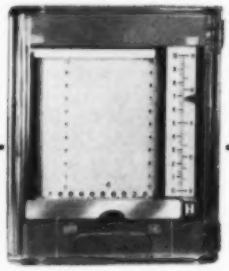
See our ad in PIT & QUARRY Yearbook

Cleloy screen sections are manufactured and woven to withstand high abrasion, corrosion and continuous process steam. Properly applied, they produce high tonnage, reduce blinding and require minimum maintenance. For amazing results in your screen operations—write or call your specifications today.

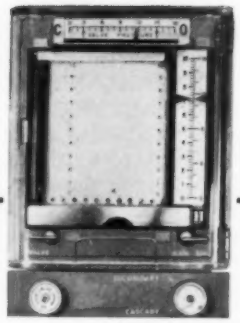
THE CLEVELAND WIRE CLOTH & MFG. CO.
3574 East 78th Street • Cleveland 5, Ohio • Telephone: Diamond 1-1832

Enter 37 on card, page 241

Exhaust fan and tempering air damper position, cooler exhaust temperature, feeder position and similar variables are precisely indicated on *Tel-O-Set* circular scale indicators. Readable to 0.5% of full scale.



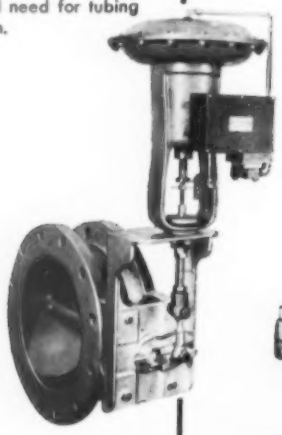
Kiln speed, product temperature, coal mill temperature and cooler bed temperature, as well as other variables, are recorded and indicated by *Tel-O-Set* single and multiple point recorders.



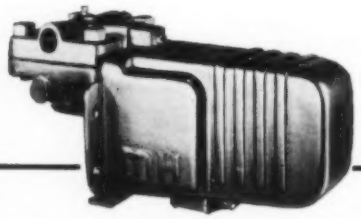
Fuel-air ratio is maintained at point of maximum efficiency by *Tel-O-Set* controller which resets combustion air from fuel requirements and O_2 analysis at the stack.

Remote measurements of temperatures, draft, and other variables are transmitted to the recorder or controller by the *ElectroniK* Electro-Pneumatic Transmitter. Eliminates time lag and need for tubing compensation.

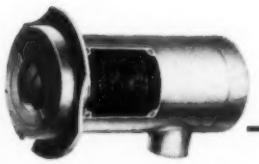
From burner



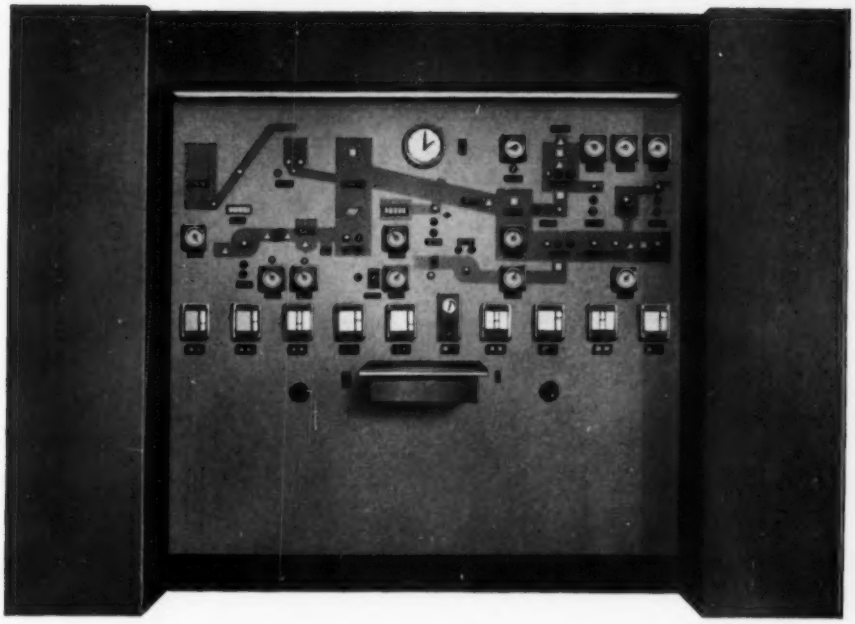
Kiln draft, tempering air, and air to mill dampers are all regulated by this Honeywell valve operator with integral positioner. Also used for cooler, grate speed and draft regulation.



Differential Converter used to measure flows throughout the entire process. Measures directly and transmits pneumatically to the recording and/or controlling instruments on the central control panel.



Product temperature of cement clinker, lime, etc., is detected by *Radiamatic* pyrometers connected to *ElectroniK* instruments . . . which in turn can initiate automatic fuel control.



Graphic instrument panel, with miniature recorders and indicators, makes it easy to control the entire kiln operation from one central point.

to stack

Honeywell instruments keep kilns, calciners, and dryers at top efficiency

High quality . . . uniformity of product . . . low operating costs . . . these are the results when Honeywell instrumentation is used on kilns, calciners, and associated equipment. These instruments measure and control variables from one end of the kiln to the other—temperature, flow, draft, speed and fuel-air ratio.

Honeywell engineers are well qualified to work with producers and equipment manufacturers to develop complete control systems, using these and related instruments and accessories. Custom-designed panels focus the supervision of your kiln operation in a single, integrated control center. For a discussion of your specific requirements, call your local Honeywell field engineer . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa.

75th YEAR — PIONEERING THE FUTURE

Honeywell

First in Control

SINCE 1885

OWEN BUCKETS

THE GIANT OF THEM ALL

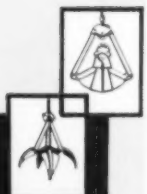
The following five combined features make OWEN the big giant performer . . . for any type of clamshell work . . . for any model or make of crane.

1. Block and Tackle Type Reeving
2. One-Piece Head Construction
3. Riveted Bowl Assembly
4. Single Main Shaft
5. Recessed Lips

Added to these construction features are more than fifty years experience in the manufacturing of clamshells . . . and nothing else! For any job that requires a clamshell, there is an Owen to fill the bill . . . backed by proven construction design and over one-half century of experience.

Put the Giant on your crane — OWEN — and know the work will be done faster, better and more economically.

Write today for any specific or additional information



The OWEN BUCKET Co.
BREAKWATER AVENUE, CLEVELAND 2, OHIO
BRANCHES: New York • Philadelphia • Chicago
Berkeley, Calif. • Fort Lauderdale, Fla.

Enter 40 on card, page 241

Harry F. Thomson Dies In Mexico after Heart Seizure

Harry F. Thomson, 72, who for several years was the author of the RX Ready Mix department in our sister publication, MODERN CONCRETE, died recently in Mexico City. At the time of his death Mr. Thomson was attending the annual convention of the American Concrete Institute; he suffered a fatal heart attack on November 7.

From 1927 to 1948 he was president of the General Material Company of St. Louis. He also served as a vice-president of Material Service Corporation of Chicago. Earlier in his career he had been vice-president of Provident Chemical Works, which was founded by his grandfather. (Provident later became a subdivision of the Monsanto Chemical Company.)

Mr. Thomson was a past-president and also a past-vice-president of the American Concrete Institute, and a past-president and honorary member of the board of directors of the National Ready Mixed Concrete Association. In 1950 Mr. Thomson received the Wason Medal for the most meritorious paper, entitled *Specifications Should Be Realistic*. This award was presented by A.C.I.

Since 1955 he had been engaged in consulting work. He was the author of numerous papers on technical subjects related to the productiion of concrete.

Low Accident Frequency Rate Reported for Gypsum Plants

According to statistics of the Gypsum Association, the gypsum industry had an accident frequency rating of 4.13 in 1958.

This figure is in sharp contrast to the National Safety Council's all-industry average of 6.17, and the 9.14 average of the clay and minerial products group (which includes the gypsum industry). The Gypsum Association rating covers all gypsum operations including quarrying and mining.

The Vulcan Materials Company, Birmingham, Ala., has purchased the Okolona Stone Company of Okolona, Ky., which will be operated by the Lambert Bros. Division of Vulcan.

World-Wide Cement News

Italian Cement Company Embarks on Expansion Plan

Cementir Company of Rome recently opened a new cement facility (capacity: 500,000 tons per year) at Arquata Scrivia, a village in northwest Italy. At the same time, plans were announced to step up the initial output to 1,000,000 tons.

The firm's 800,000-ton capacity plant at Bagnoli (near Naples) will also be expanded to produce 1,000,000 tons annually. Cementir will build a new facility at Taranto (located in the "heel" of Italy) as an internal part of the iron and steel works planned for that zone.

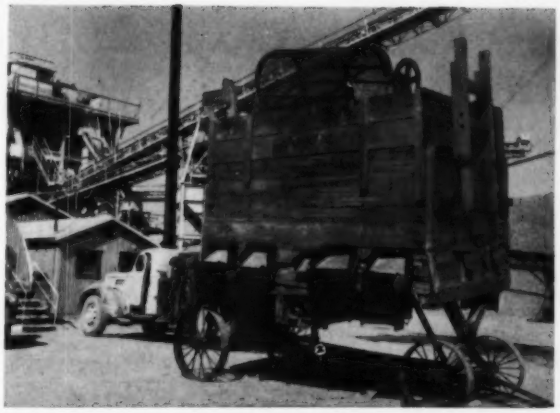
'58 Cement Output of Turkey 20 Percent Above 1957 Total

Production of cement in Turkey during 1958 totaled 1,500,000 metric tons, an increase of 30 percent over 1957 production, according to the U. S. Bureau of Mines. The 1959 production is expected to be about 2 million tons. (See PIT and QUARRY, November, 1959, page 50.)

Three new plants began producing cement in 1958, increasing total producing units to 13; the 10 plants previously in operation showed a 14 percent net gain in production.

Among plants reported under construction are the Konya, a privately-owned plant with an annual capacity of 150,000 tons, and the Gaziantep, which is state owned. No definite completion date has been announced for the other five state-owned plants scheduled for Nigde, Soke, Bartin, Batman, and Erzerum.

Cement production in Belgium in 1958 totaled 4,057,000 metric tons, putting Belgium in 14th place (consisting of 1.6 percent) in total world production. Belgium's share has slumped since 1938, when it was the 8th from the top, with 3.5 percent of the world total.



• When PIT AND QUARRY was founded more than 43 years ago, the sand and gravel industry was just emerging from its primitive processing era in which equipment such as the rig pictured here was used. This one was probably one of the first portable dry-screening plants in existence, utilizing the small revolving screen above the wooden body (2-compartment bin) to separate and store coarse and fine material. The gated chutes below were pretty handy, too, for filling wheelbarrows!

This relic of the past was recently unearthed by the Southern Pacific Milling Company and put on display at its spanking new 400-t.p.h. automated aggregates-processing plant at El Rio, Calif. For the visitors at the open-house celebration, it was a striking example of the changes in the firm's long history. A section of the main screening tower of the new plant (which includes heavy-media separation to beneficiate the gravel) can be seen in the left background.

F. Beaver & Sons, a sand and gravel company of Noblesville, Ind., is now under the full ownership of Charles A. Montgomery. Mr. Montgomery and the two former co-owners, Forrest and Marion Beaver, had been associated in the firm since 1946. Forrest Beaver has announced his retirement, and his son Marion has opened a ready-mix plant on land leased from Mr. Montgomery.

HOW TO SAVE MONEY ON

Gravel Chute • Core Liner
Truck Bottom & Side • Wear Plate

REPLACEMENTS AND REPAIRS

Do as many time-conscious, money-conscious organizations do

. . . use **ABRASALLOY STEEL**

heat treated alloy plates and sheets

Withstands tremendous impact and abusive crunching abrasion against rock, sand, grit, gravel, other destructive elements. Easily formed, sheared, bent. Amazing hardening qualities. All thicknesses, widths, lengths.

FREE Folder P-1. *Write today!*

ATLANTIC STEEL CORP.

Our 40th Year of Service to Industry

35-27 36 St., Astoria 6, New York

Enter 41 on card, page 241

Material: *iron ore pellets from Mesabi*

Rubber-tired machines

From a distance it looks like any other stockpiled material. Then you come close and you see this is *something different*. You've heard the name. It's *taconite!* Round pellets, varying from a half-inch to three-fourths inch in diameter, blue-gray in color, containing about 64% processed iron ore.

When rubber-tired machines can handle such material *successfully*—day in and day out—with rubber's obvious advantages of mobility and no track wear—that's real news for maintenance-minded firms that have almost *any sort* of stockpile problem.

This Minnesota taconite plant has *five rubber-tired Michigans*. These include a 2¼ yd Model 175A, a 2¼ yd 125A, and two 1¼ yd 75A Tractor Shovels . . . and the 262 hp Model 280 Tractor Dozer pictured. The Tractor Dozer exemplifies Michigan advantages . . .

Advantage No. 1—Tire Life

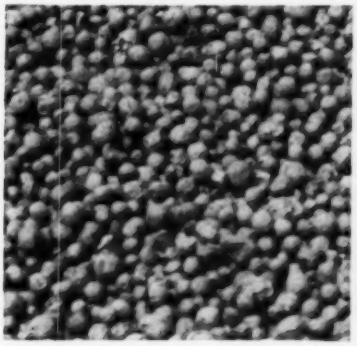
This 56,000 lb machine started work about a year ago. To date, its tires show virtually no wear. The machine does a variety of jobs. For example . . .

Advantage No. 2—Mobility

1. Levels the multi-million ton taconite pellet stockpile. Unit works on 2-to-1 and 3-to-1 slopes, has surprised men on the job with its ability to climb steep grades on loose footing.

2. Cleans around the 10-yard pellet-loading shovel. Major advantage in this operation is how Michigan's low-pressure tires don't crush the pellets

This is processed taconite ... loose, heavy pellets.



Rubber-tired Michigan proves ideal for handling.

Rig works steep grades, compacts without powdering.

Range taconite—abrasive, heavy

the only practical solution

... a real problem with crawlers.

3. Maintains haul roads.

4. Tows disabled trucks.

5. Cleans up around pellet plant. Unit gets to this assignment, 2 miles away by road, at speeds up to 28 mph, travels under own power without waste of lowboy loading or unloading, does no damage to railroad tracks or blacktop paving.

6. Cleans under loading pocket. Here, operator dozes normally until he accumulates load. Then he hydraulically pivots blade back, lifts material, turns and dumps outside the railroad tracks.

Advantage No. 3—Dependability

Key to Michigan success, however, has been dependability! Entire power train of each machine—torque converter, power shift transmission, planetary axles—is designed and built by Clark, specifically engineered to give more usable power and traction than you've ever seen on rubber. Get the proof of a demonstration. Four Michigan Tractor Dozer models—162 to 600 hp—eight Michigan Tractor Shovels—16 cubic feet to 6 cubic yards—to choose from. Also a full line of Tractor Scrapers . . . 10½, 19 and 29 cubic yards.

Michigan is a registered trademark of

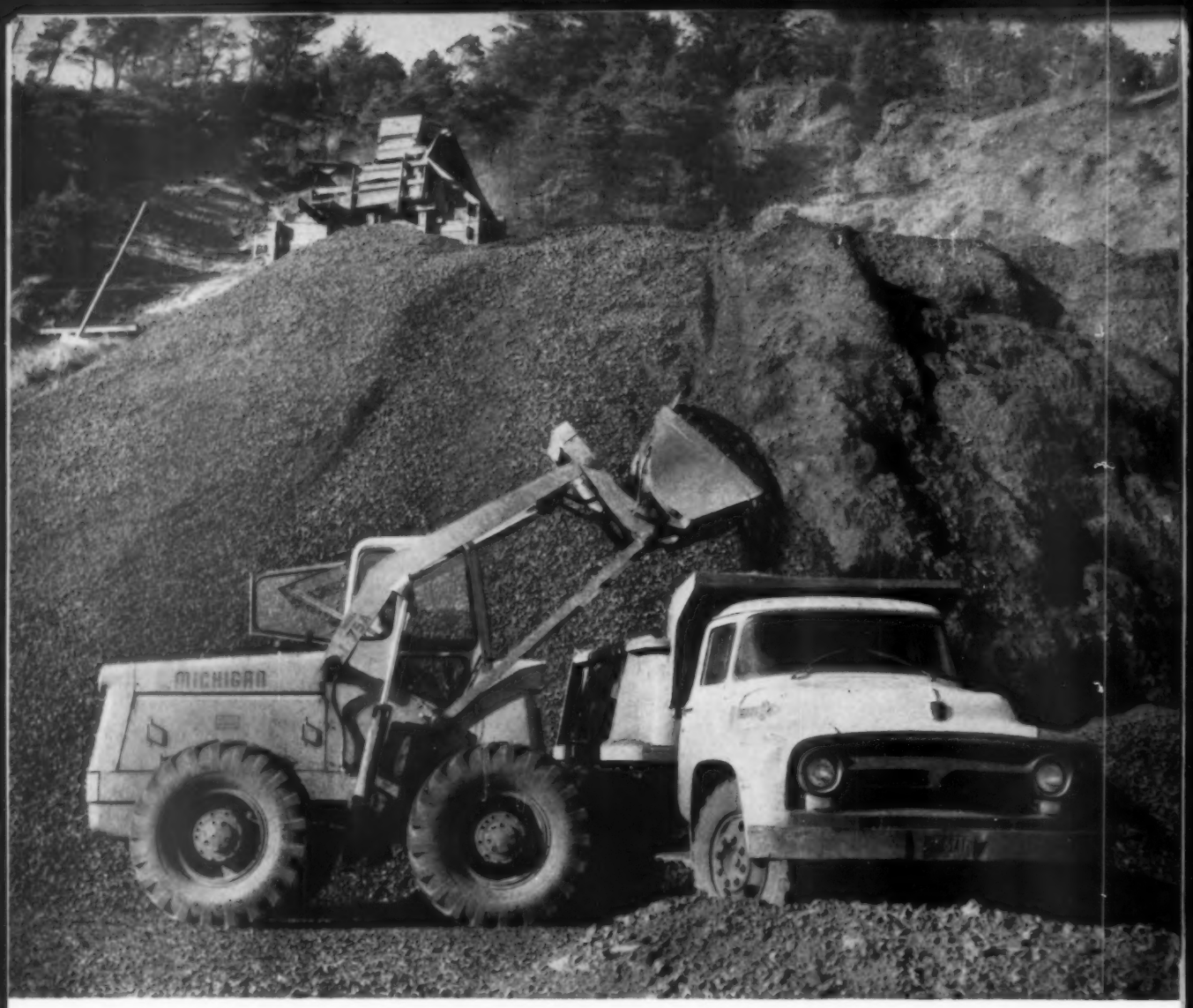
CLARK EQUIPMENT COMPANY
Construction Machinery Division

CLARK® EQUIPMENT

2479 Pipestone Road
Benton Harbor 2, Michigan

In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario

Enter 42 on card, page 241



In 5 years, 1½ yd Michigan loads 450,000 yds of rock. Yet...

REPAIR COSTS TOTAL $82.85

In studying most efficiency reports, you have to remember one extremely important fact: that the data given usually cannot legitimately be applied to machines now available. Changes galore—for good or bad—have been made since the veteran unit was built. That is why this report seems to us so significant. The Michigan Tractor Shovel described is in every important component EXACTLY like the Michigans made today. In fact, all 12,000 Michigan Tractor Shovels built have been like the first one—a tribute to the efficiency of design and efficiency of their all-Clark designed and built power trains.

For the past five years, Yaquina Head Quarries, Newport, Oregon, has used this Model 75A Michigan Tractor Shovel 6 to 8 hours a day, 5 days a week, truck-loading crushed rock. The machine has handled over 450,000 yards of material, ranging in size from ¼" to 4" minus.

Its only downtime in all these months has been for changing points and plugs, and for replacing two brake cables, two hydraulic hoses, and the bucket edge.

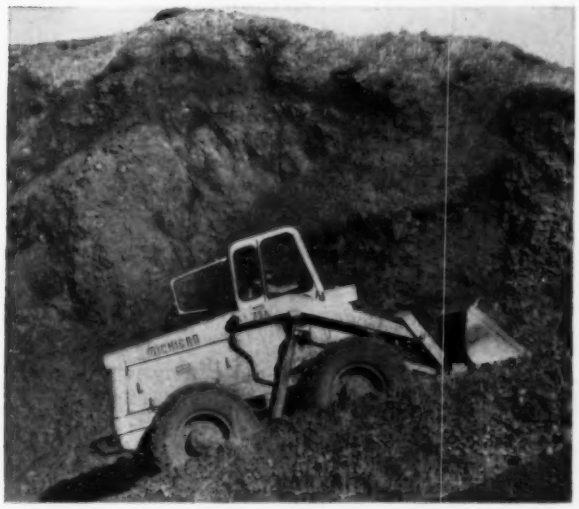
The work took less than six hours and parts cost exactly $82.85.

For this superb record, credit belongs partially to excellent machine design and construction . . . partially to Plant Supt Virgil Landess' insistence on a simple, regular, preventive maintenance program. The Michigan is greased every day. Rear end and torque converter are checked twice a week. Oil is changed every 40 hours, filters every 80 hours, and a one-hour maintenance check made every two weeks.

"Cheap insurance for keeping an excellent machine excellent," says Quarry Owner Roy Sawyer.

Stock-piles at the Yaquina Head quarry are located in a quarter-mile semi-circle around the crusher, on two levels. Good brakes, excellent visibility, 26 mph speed, fingertip power steering combine to cut travel time between loading locations.

Material—after shooting, secondary shooting, crushing, and normal 2½-to-1 swell—weighs 2600 to 2800 lbs per yd. Mostly basalt, tests show a very small percentage of iron in the rock. Assays have picked up gold, too—80c worth per ton.



Steep 20% grade between stockpile levels proves no problem for the powerful four-wheel-drive Michigan—even in wet weather.

Among the many odd jobs done by Yaquina Head's quarries mobile Michigan Tractor Shovel: moving a 4,000 lb crusher head.

Loads typical truck in one minute

The 80 hp Michigan speeds all kinds of scattered assignments. It lifts crusher heads, for example. Picks timbers. Sets motors. But mostly it loads trucks. "Everything from pickups to 15 yard semis with 8 ft high sides," describes Owner Sawyer. A typical 5 yard truck is loaded in four bucket-fulls. Time: 1 to 1½ minutes.

Reduces truck waiting time 80%

Fast loading—plus fast travel between the nine stone stockpiles—has cut truck waiting time to practically zero. "In the old days—when we handled loading with a ¾ yard rubber-tired machine of another make—trucks often had to wait 10 to 15 minutes each for loading service," remembers Mr. Sawyer. "That old machine couldn't load out more than 250 yards a day. Our Michigan easily loads 400 to 500 yards a day. And it *has* loaded as much as 835 yards (in 8 hours)."

Eight models now available

How do your production requirements compare? If they're the same (or less), your most economical bet for the job probably would be a Michigan 1¼ yard all-wheel-drive model (like the machine described here). For greater output, you have a wide choice of bigger machines: with 1¼, 2, 2¼, *and the new 4 or 6 yard buckets* (standard SAE measure). For clean-up around crushers and belts, there's a 16 cubic *foot* size and a 1 yard size. Eight standard models in all. See your Michigan Distributor for details.

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2479 Pipestone Road
Benton Harbor 1, Michigan
In Canada: Canadian Clark, Ltd.
St. Thomas, Ontario

Michigan is a registered trade-mark of

CLARK® EQUIPMENT

Enter 44 on card, page 241

Rexarc
"King of the Arc"
•
The Complete
Hard Facing Line
MANUAL and
AUTOMATIC
•
Write for
Free Brochures
The Sight Feed
GENERATOR COMPANY
WEST ALEXANDRIA, OHIO, U.S.A.

Enter 46-A on card, page 241

Lime Sales in September, 1959

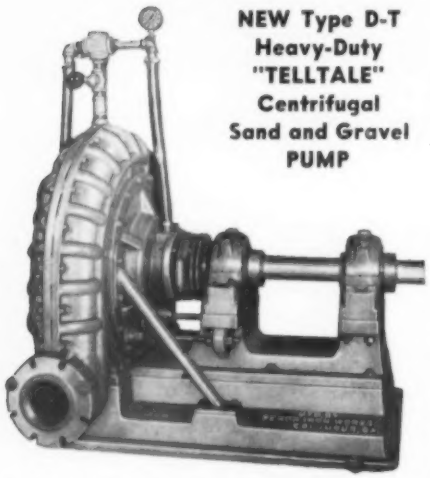
Domestic sales of open-market lime in September, 1959—683,795 short tons—increased from the previous month's output, according to reports made by producers to the U. S. Bureau of Mines. Increases were noted in sales for all major categories.

Lime Sold by Producers[1] in the United States, in Specified Periods of 1958-59, by Types and Major Uses in Short Tons

	August	September		January-September	
	1959	1959	1958	1959	1958
By types:					
Quicklime	375,714	485,860	516,397	5,263,834	4,135,497
Hydrated lime	173,783	197,935	171,024	1,550,603	1,416,068
Total	549,497	683,795	687,421	6,814,437	5,551,565
By uses:					
Agricultural:					
Quicklime	6,011	5,685	7,958	52,807	41,457
Hydrated lime	5,713	7,904	10,051	88,427	97,967
Total	11,724	13,589	18,009	141,234	139,394
Construction:					
Quicklime	7,573	29,938	12,297	116,160	99,208
Hydrated lime	93,860	93,185	85,640	752,525	689,812
Total	101,433	123,123	97,937	868,685	789,020
Chemical and other industrial:					
Quicklime	319,056	402,773	349,262	3,627,842	2,858,852
Hydrated lime	74,210	96,846	75,333	709,651	628,289
Total	393,266	499,619	424,595	4,337,493	3,487,141
Refractory (dead-burned dolomite)	43,074	47,464	146,880	1,467,025	1,136,010

[1]Also includes a quantity of captive tonnage. The monthly canvass excludes the output of plants producing less than 10,000 tons a year.

ONLY "TELLTALE" PUMPS WARN WHEN IT'S TIME TO RELINE



NEW Type D-T Heavy-Duty "TELLTALE" Centrifugal Sand and Gravel PUMP

No time-wasting look-see at the pump's insides necessary. Water leaking through the ports between the bolted halves of the outer shell tell the tale of a shell liner worn through.

When the shell liner wears through, sand and gravel quickly eat through the rope-type packing between shell liner and the shell. Hence the telltale leak.

AS LOW IN DOWNTIME AS IT IS HIGH IN PRODUCTION

The useful and exclusive telltale feature is one of all the best retained in the latest "Telltale" pump, only type we now manufacture.

Some new features: New highs in production—new lows in downtime, because of simple foolproof assembly for changing parts—also "Telltale's" own.

Available with either tough semi-steel or best-in-the-long-run Ni-Hard wearing parts in 4", 6", 8", 6 x 8" suction and 8 x 10" suction. Now available also in either alloy, 45 and 90° extra-heavy long-radius flanged elbows. Write for Type D-T Heavy Duty folder and prices.

PEKOR IRON WORKS, INC.
ESTABLISHED 1892
LOCK DRAWER 909 FAIRFAX 2-4020 COLUMBUS, GEORGIA

Enter 46-B on card, page 241

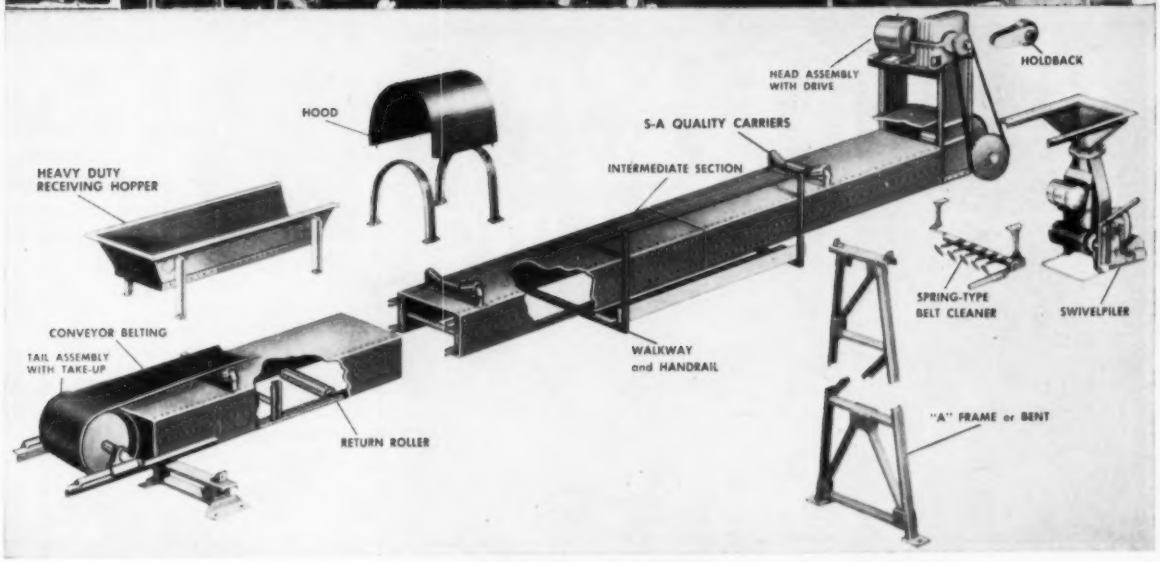
Safe Driving in Winter Subject of New Pamphlet

A driver's strongest defense against winter's deadly tricks is know-how, according to the National Safety Council, publishers of a new pamphlet designed to provide that know-how.

This 16-page publication, *How to Winter-Wise Your Driving*, contains practical, dependable information obtained from N.S.C. tests of vehicles, tires, and driving methods.

Single copies may be obtained without charge from the National Safety Council, 425 N. Michigan Avenue, Chicago 11, Ill.

Calaveras Cement Company recently received two awards from the U. S. Bureau of Mines in recognition of a full year of quarry operation without lost-time injuries. The company was presented with two Certificates of Achievement for its 1958 record of 263,212 accident-free man-hours worked in its quarries at San Andreas, Calif. Calaveras is a new division of The Flintkote Company.



STEPHENS-ADAMSON

SECTIONAL BELT CONVEYOR

Here's a "do it yourself" conveyor that not only provides for fast, simple on-the-job erection but combines quality conveyor components and features provided in no other pre-engineered conveyor. Exclusive Bent Plate Decking assures easy erection or alteration and provides protection for return run of belt. Four high-strength bolts fasten head assembly . . . eight bolts join intermediate sections . . . and six bolts connect tail assembly — for simplest installation ever. Check features at right.

- S-A CURVE CROWN® Pulleys — Revolutionary new crown provides greater belt training effect while minimizing belt stretch and wear. New SQUEEZELOCK® Hub provides full gripping power — eliminates keyways.
- S-A Quality Carriers — Precision ball bearing carrier rollers (4" or 5") assure smooth, trouble-free performance. Roller bearing carriers optional.
- SEALMASTER® Self-Aligning Ball Bearing Units — Performance proven in countless conveyor installations.
- S-A SACO® Speed Reducer — Rugged, compact, quiet unit . . . famous for dependability. Shaft mounted reducers optional.
- S-A Spring-Type Belt Cleaner — Wipes belt clean of wet or dry materials. Simple to install, adjustable, saves belt, eliminates clean-up maintenance.
- S-A Holdback — Easily mounted on headshaft to prevent belt reversal Protects equipment and personnel.
- S-A SWIVELPILER® — Extend reach of conveyors tenfold with powerful centrifugal thrower unit.

AVAILABLE IN 18", 20", 24", 30" and 36" WIDTH CONVEYORS—DELIVERED FROM STOCK.

WRITE FOR BULLETIN 458

S-A
ENGINEERED BULK HANDLING SYSTEMS
STANDARD MATERIALS HANDLING PRODUCTS
SPEEDWALK® PASSENGER CONVEYORS
STEPHENS-ADAMSON BALL BEARING UNITS
SPHERCO® BEARINGS & ROD ENDS

STANDARD PRODUCTS DIVISION
STEPHENS-ADAMSON MFG. CO.
GENERAL OFFICE & MAIN PLANT, 20 RIDGEWAY AVENUE, AURORA, ILLINOIS

PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA • CLARKSDALE, MISSISSIPPI
BELLEVILLE, ONTARIO

Industry Personalities

SAMUEL H. DOLBEAR, eminent consulting mining engineer and geologist, has been named to receive the Hal Williams Hardinge Award from the American Institute of Mining, Metallurgical, and Petroleum Engineers. Presentation will take place during the A.I.M.E. annual meeting in New York City (February 14-18, 1960).

Mr. Dolbear will receive the award in recognition of his achievements "for the improvement and increase of mineral knowledge." The citation also lauds his outstanding service in the founding of the Industrial Minerals Division, his subsequent chairmanship of the division, and editorial chairmanship of the two first volumes of the authoritative *Industrial Minerals and Rocks*.

The award for outstanding achievement in the field of industrial minerals was established by Mrs. Bertha W. Hardinge in memory of her husband, a noted inventor and manufacturer of mining and milling equipment.

Model R3W-20 Floor Type
Handles x-type bits up to 5"—cross type up to 5½"

DETACHABLE ROCK BIT GRINDER CUTS DOWN-TIME – LENGTHENS BIT-LIFE

BLOUNT machine-sharpens carbide-tipped rock drills far more accurately than any operator, however skilled, can by hand — and up to five times faster!

When you recondition your rock bits on a BLOUNT GRINDER, you can be sure of a uniform, symmetrical grinding job, including the exact angles the manufacturer intended.

Put a BLOUNT GRINDER to work for you, and get the savings so many customers report!

- ★ Longer bit-life — more regrinds per bit
- ★ Faster drilling
- ★ Reduced drilling upkeep
- ★ Lower cost per foot of drilling

PARTIAL USER LIST
Blount Bit Grinders:

Merritt Chapman & Scott Company, New York
Ball-Savin & Winkelman, New York
Shea-Kaiser & Morrison, California
Orinoco Mining Company (Subsidiary of U. S. Steel), Pennsylvania
Arch Dam Constructors, Utah
Subsidiary Companies of Bethlehem Steel Corp., Pennsylvania
Mount Vernon Contracting Corp., New York
Hanna Iron Ore Division (National Steel Corp.), Michigan
Jones & Laughlin Steel Corp., New York
Merritt Chapman & Scott Corp. of Panama, Balboa Canal Zone
James D. Morrissey Inc., Pennsylvania

J. G. BLOUNT Co.
Everett 49, Massachusetts
Div. Bowl-Mor Co., Inc.

Enter 48 on card, page 241

W. R. Dersnah

WILLIAM R. DERSNAH is now production superintendent of the Dundee Cement Company plant. He spent the last two years as chief chemist on the Gresik Cement Project in Indonesia, for the International Cooperation Administration, where he taught natives to operate a newly constructed cement plant.

W. F. Van Velzor

WILLIAM F. VAN VELZOR has been named traffic manager of the Dundee Cement Company, Dundee, Mich. Before joining Dundee, Mr. Van Velzor had been assistant traffic manager for 11 years for the George F. Alger Company, major cement and steel hauler based in Detroit and operating in the Middle West.

ROBERT E. SPENCE has been promoted to the post of district sales manager by the National Gypsum Company. Formerly assistant manager of National Gypsum's Birmingham district, Mr. Spence will now head the company's new Orleans district, which includes all of Louisiana and southern Mississippi. He will replace FRANK B. PHILLIPS JR., who has been made manager of the Houston district.

Enter 49 on card, page 241 →

D9

D9s take another hard work job in stride

Near Santa Anna, Texas, there's a vein of 99% pure silica sand 30 feet deep—enough to last one hundred years at present removal rates. To get to the sand, the Santa Anna Silica Sand Company has to blast and 'doze away a 60-foot layer of hard rock and shale overburden.

Working two shifts a day, two Caterpillar D9 Tractors move 2,000 yards a day, six days a week. It's all uphill for distances of 250 to 300 feet—but it's no struggle for the mighty D9s. One racked up over 5,200 hours and the other had almost that many—before the rails needed replacement. "That's really long wear when you consider the conditions they work in . . . all rock, shale and sand," observes Executive Vice President Robert L. Markland.

Conditions like these let the D9 really prove its superiority. Thirty tons of work-power, sparked by a 335 HP (at the flywheel) Turbocharged Cat Diesel Engine, pile into the job and keep production up in the roughest going.

For all its mighty power, the D9 is maneuverable and responsive. Hydraulic boosters help with braking, steering and clutching. The exclusive Caterpillar oil clutch rarely needs adjustment. The optional D9 heavy-duty torque converter transmission has the flexibility to quickly compensate for load changes. And now the D9 has new lifetime lubricated rollers and idlers that are service-free until time for rebuilding.

A new dry-type air cleaner that removes at least 99.8% of all dirt and dust from engine intake air during *every* service hour, under *any* conditions, makes the D9 even better suited for work in pits and quarries.

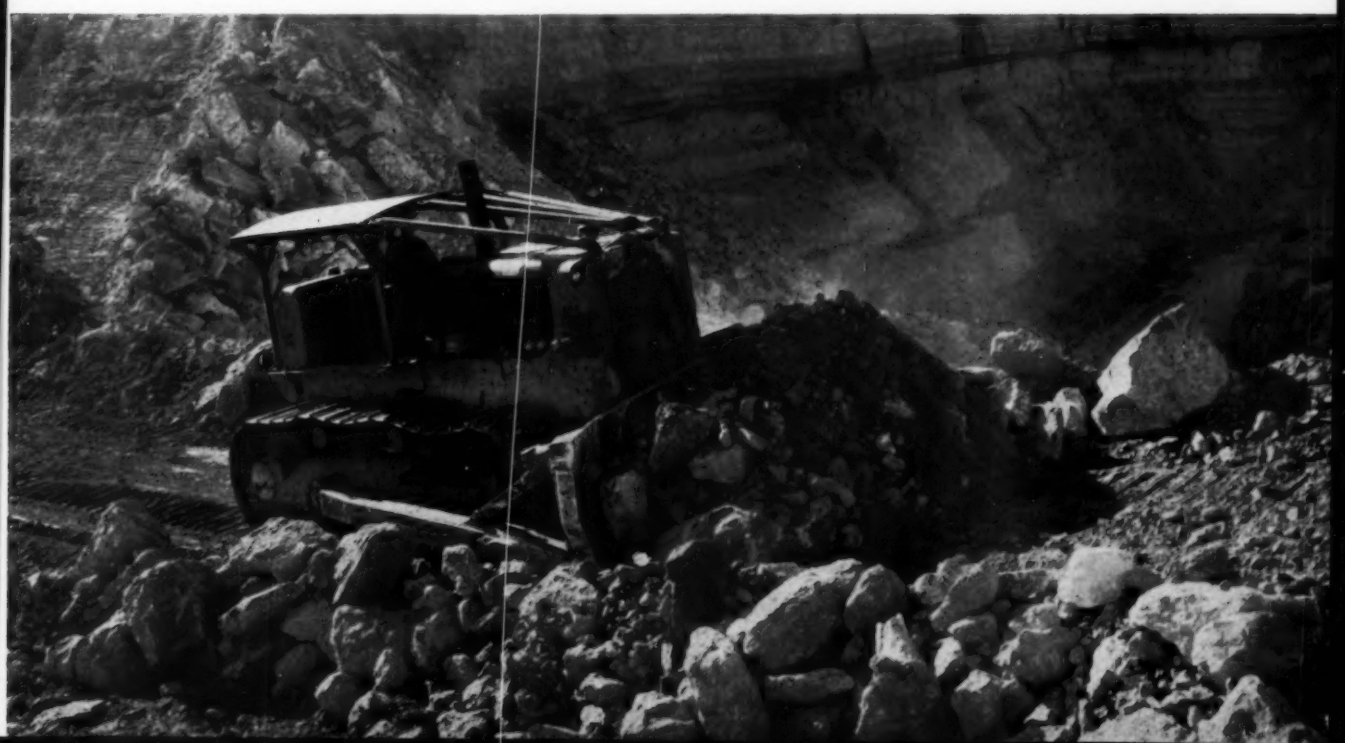
What can the D9 do to take the meanness out of your job, increase your production, bring your costs down? Your Caterpillar Dealer won't just tell you—he'll *show* you! Right on your job! Call him *now* for a demonstration date.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

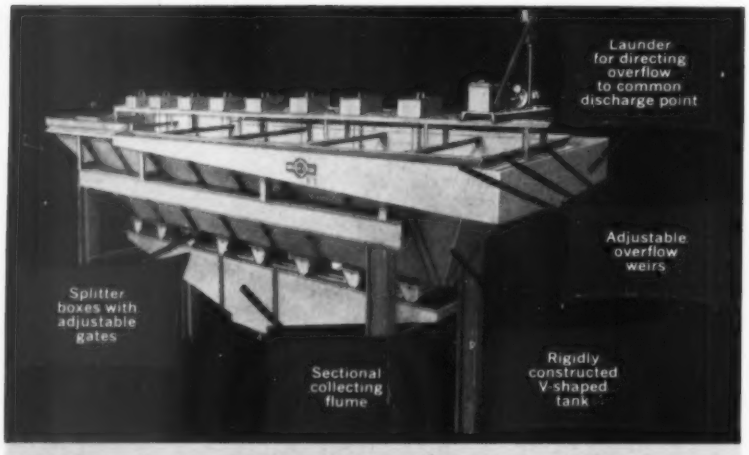
THE TAKE-CHARGE D9—
BUILT FOR THE HARD WORK

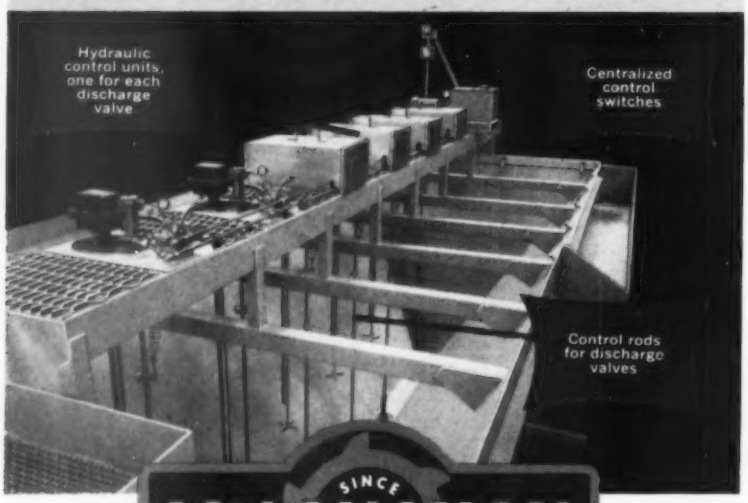


Most Effective Design

for classifying and scalping excess water from fine materials

Single, double or triple collector flume construction—with a full range of sizes for various capacities. *Ask for Bulletin SC-59.*


Launder for directing overflow to common discharge point
Adjustable overflow weirs
Splitter boxes with adjustable gates
Sectional collecting flume
Rigidly constructed V-shaped tank


Hydraulic control units, one for each discharge valve
Centralized control switches
Control rods for discharge valves

McLANAHAN SINCE 1835

SAND CLASSIFYING TANKS

McLANAHAN & STONE CORPORATION

253 Wall Street · Hollidaysburg, Pennsylvania

Enter 50 on card, page 241

J. H. Van Amburgh

JOHN H. VAN AMBURGH has been appointed vice-president in charge of sales for the Wesco Materials Corporation (Dallas, Tex.) and its subsidiaries, Wamix, Inc., Wesco Stone Corp., Minden Materials Co., and Trinity Sand and Gravel Co. He has been associated with the group of companies since 1950.

WILLIAM BOORHEM has been promoted from the post of production

W. Boorhem

J. D. Griffin

manager to that of vice-president in charge of production for Wesco and its subsidiary companies.

JAMES DONALD GRIFFIN has been named sales manager for Wesco and the subsidiaries. He was manager for Wamix, and remained in that position when Wamix became a part of the Wesco group.

MRS. ELIZABETH K. HINTZ, executive secretary of Jaeger Sand and Gravel Company, Inc., Milwaukee, Wis., has been elected president of the Construction Industry Credit Bureau in that city. The bureau gathers credit and financial information about builders and contractors for its members.

CARL A. WALLERSTEDT recently retired as manager of the Waco, Tex., plant of Universal Atlas Cement Division of U. S. Steel Corporation, after 40 years of service. The new plant manager is RAY GRAVES, who was administrative assistant, operating, at the cement firm's New York headquarters before this promotion.

Horace Straight

Ideal Cement Company has announced changes in its production department due to the resignation of HARLEY FLEMING, southern regional production manager. The plants formerly in the southern region were assigned to HORACE STRAIGHT, who now supervises the Boettcher, Portland, Tijeras, Ada, Superior, Okay, Houston, Mobile, and Baton Rouge plants, and terminals at New Orleans and Lake Charles.

A. W. HOOTON will continue to have charge of the plants at Devil's Slide, Trident, Spokane, Redwood City, San Juan, Gold Hill, and Grotto, and the Sacramento terminal.

S. W. Julian

STANLEY W. JULIAN has been appointed sales manager for Acme Materials Company, Inc., of Phoenix, Ariz., producers of crushed gravel, sand, and ready-mixed concrete. Mr. Julian was formerly executive secretary of the Independent Contractors Association of Arizona.

JACOB R. SENSIBAR, president of Construction Aggregates Corporation, Chicago, has been elected national president of the American Technion Society. Mr. Sensibar previously had served as president of the Midwest Region of Technion, which is a nationwide group composed of more than 15,000 engineers, scientists, technicians, and industrialists sponsoring the Technion-Israel Institute of Technology.

JOHN E. NEWELL has been promoted to the position of assistant sales manager of Union Rock and Materials Company of Phoenix, Ariz. He has been associated with the firm for the last eight years.

PROFITABLE TONNAGES

of cleaner, drier product

Greatly improved drive with direct shaft mounted reducers . . . more effective performance in a broad range of operating conditions . . . heavier construction for longer service—these fundamentals make McLanahan Single or Double Screw washers your soundest buy.
Write for New Bulletin.

SCREW WASHERS

McLANAHAN & STONE CORPORATION
253 Wall Street Hollidaysburg, Pennsylvania

Enter 51 on card, page 241

General Electric announces . . .

NEW DRAW-OUT DESIGN

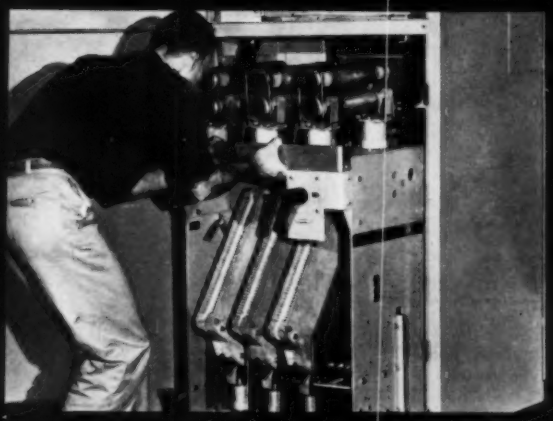
From General Electric comes the all-new draw-out Limitamp control—today's most advanced medium-voltage motor starter. Designed for the control of a-c motors rated 2300 through 4600 volts and up to 3000 hp, this new air-break starter has broad application throughout industry.

Since its introduction in 1941, Limitamp control has established a reputation for being first with the design features that add up to major user benefits. And, today's all-new Limitamp control follows this pattern with a host of design innovations that make for:

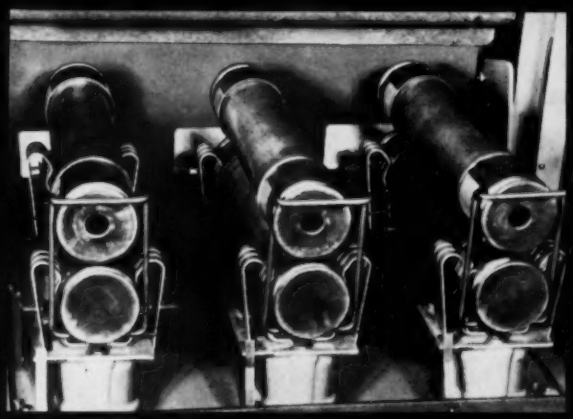
Faster installation: When you're ready to roll in the contactor—it can be done easily by one man. And, there are no connections to make—they are made automatically as the contactor rolls into place. There's plenty of space inside the panel for pulling the motor and power cables . . . and making the connections. And, with the new design, floor sills have been eliminated. This means no more grouting, no expensive cement work, simplified lineup with other panels.

Simpler, safer operation: One handle now controls the complete operation of connecting and disconnecting the starter from the bus and mechanically locking the high-voltage compartment door. A unique interlocking system protects the unit from misuse.

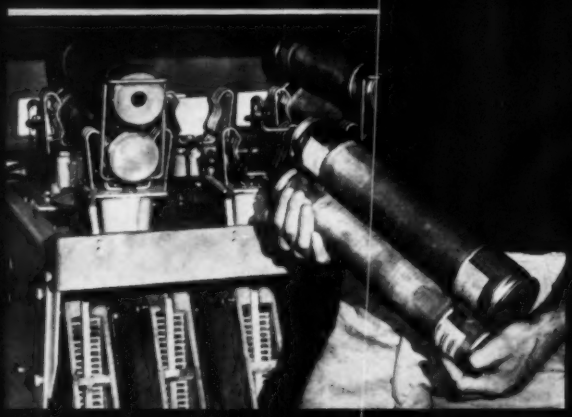
Superior protection: General Electric's new Limitamp



INSTALLS IN HALF THE TIME—Draw-out air break contactor, roomy isolated cable compartments, and increased working space help simplify installation.



LIMITAMP CONTROL IS ISOLATED AUTOMATICALLY—A unique shutter box isolates the starter from high-voltage power when the operating handle is turned to the off position.



INTERRUPTS FAULT IN FIRST ½ CYCLE—Fast-acting, current-limiting fuses interrupt circuit before short circuits cause damage to valuable motors.

NORMAL MAINTENANCE WITH CONTACTOR IN PLACE—All components, including the high-voltage contactor, can be maintained right in the control unit, with complete safety.

LIMITAMP* CONTROL

control utilizes fast-acting current-limiting fuses, ambient-compensated overload relays, and a high-voltage contactor to provide the most "positive" protection for your motors. Proved EJ-2 fuses interrupt a fault in the first ½ cycle, thus reducing damage to valuable motors. The performance of the completely coordinated design has been exhaustively tested in General Electric's high-voltage laboratory to provide the most reliable equipment for your application.

Easier maintenance: Even with these advanced design features, new Limitamp controls are simpler than ever to maintain. All components are accessible from the front for inspection and maintenance—without removing them from the enclosure. A special test circuit is built into each unit—permitting check-out operation before the unit is put into service.

For full information on all-new Limitamp motor control, contact your G-E Apparatus Sales Engineer or Agent today. Or write Sect. 783-10, General Electric Co., Schenectady, N. Y., for Bulletin GEA-6893. Industry Control Dept., Roanoke, Virginia.

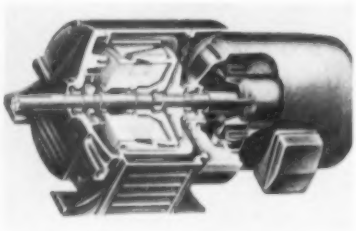
*Reg. trade-mark of General Electric Company.

Progress Is Our Most Important Product

GENERAL ELECTRIC

Enter 52 on card, page 241

new machinery



● General Electric Company's new, low cost Kinatrol line of eddy current coupling adjustable speed drives from 5 to 100 hp. features simplified design with fewer moving parts.

The Kinatrol is being offered as a complete package including the drive unit, control enclosure with control for both coupling and integrally mounted Tri-Clad 55 a.c. motor, and operator's station.

Ratings through 20 hp. are capable of continuous operation down to 100 r.p.m. at rated torque, providing a speed range of approximately 17:1.

All ratings are in horsepower delivered at the output shaft of the coupling, rather than at the output shaft of the a.c. motor.

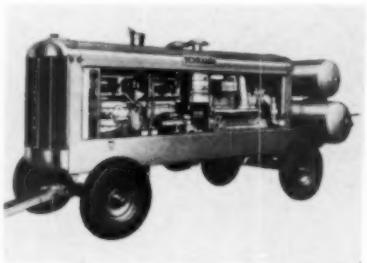
Automatic control provides close speed regulation as standard. On a typical friction-type load, for example, regulation of 2 percent of full speed can be obtained with standard equipment.

Control enclosure elements are all front wired with exciter-regulator featuring plug-in component board for quick replacement. (351)

● This 40-ton P&H 565A-TC is one of five new 35- through 80-ton capacity truck crane models introduced by the Harnischfeger Corporation. The 40-ton model has proven popular for drop-ball secondary fragmentation of pre-blasted material in quarrying and open pit mining.

Among the features of the P&H 565A-TC is a patented method of transmitting power electro-magnetically for swing. This system, called Magnetorque, eliminates friction clutches and requires no lining replacements, adjustments, or maintenance. The machine also has a sealed power box in which all gearing is completely enclosed and runs in a bath of oil. The boom is of T-1 steel tubular chord and lattice contruction. (352)

● Schramm, Inc., has added to its line of Unistage portable air compressors the Model 600-TC, which delivers its full 600 c.f.m. of air at 100 p.s.i. The compressor is driven



by a turbocharged engine with an operating speed of 1,200 r.p.m.

Standard equipment includes a single liquid cooling system which circulates through the entire unit, an electric starter with 12-v. battery and generator, lubricating oil filters on both engine and compressor, A.S.M.E. Code air receiver and fuel tank, lockable sliding doors, and the Schramm Pneumastat which automatically regulates the speed of the unit in accordance with the demand for compressed air placed on it.

Special equipment available includes automatic hot water and low oil pressure safety shutdowns, electric or manual brakes, special oil pan and scavenging pump for operation at angles up to 20 deg., and aftercoolers for special applications which require moisture-free air. (353)

● A new, compact helical gear drive, designed especially for screw conveyor installations, has been announced by The Falk Corporation. Various drive assemblies can be furnished from stock—the basic drive (reducer with drive shaft and seal housing) can be combined with standard trough end as well as with the new Falk motor mount.

Falk screw conveyor drives are manufactured in six sizes, each with ratios of 4:1, 9:1, 14:1, and 24:1, assuring a complete selection for all

and equipment

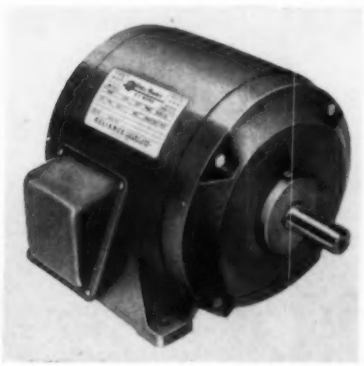
for further information use card on page 241

conveyors requiring ½ to 30 hp. Drive shafts are removable by means of a quick snap ring arrangement. On many applications, drive shafts can be removed without disturbing the reducer or screw. Tapered roller bearings in unit absorb thrust from the screw conveyor, eliminating the need for thrust bearing on the trough end.

Trough ends, available in eight sizes, from 6 in. to 20 in., bolt to any standard trough. A choice of seals (waste packing, felt seal, or lip seal, either leather or neoprene) is offered between conveyor and reducer, to suit the conveyed material.

The all-steel, pre-drilled motor mount provides a convenient and economical method of mounting any N.E.M.A. foot-mounted motor within the rated capacity of the reducer. (354)

● A new line of integral horsepower a.c. motors has been introduced by the Reliance Electric and Engineering Company. Called Duty Master motors, the new line is avail-



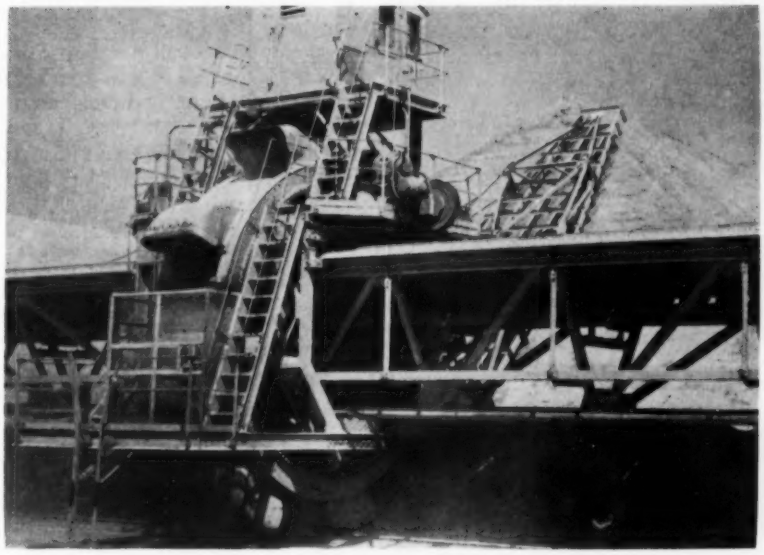
able in sizes from 1 through 250 hp. in protected (open), weatherproof, totally-enclosed, corrosion-proof and explosion-proof enclosures. The new Duty Master motors may be specified in all standard speeds and voltages. Designs include polyphase, ball bearing, vertical and horizontal mounting arrangements with feet or footless, with N.E.M.A. C-face, D-flange or P-base brackets.

New single-phase motors, sleeve bearing motors, resilient mount motors and larger rerated sizes in the Duty Master design will be introduced in the coming months.

One of the principal features of the new Duty Master motors is the low inertia, fast accelerating rotor. Constructed of pressure-cast aluminum, the rotor is dynamically balanced to movement tolerances as precise as .0002 of an inch, to prolong bearing life and produce quiet operation. (355)

● Wheelabrator Corporation offers a handy comparison chart as a guide to the selection of filter cloths used in dust and fume collectors.

Cotton, nylon, Orlon, Dacron, and silicone-treated glass are classified according to temperature limits; strength; resistance to acid, alkali, and abrasion; and relative cost per bag. Since each fabric possesses qualities favorable to certain conditions, selection can be readily determined on the basis of particular needs. (356)



● A giant wheel as high as a three-story building is the key element in a new blending and reclaiming machine designed and built by Hewitt-Robins, Inc., for mixing various grades of ore, cement, and other bulk materials to uniformity.

Resembling a huge ferris wheel, the rotating wheel is fitted with rugged 2-ton capacity buckets which dig in and remove stockpiled bulk material at a rate of 300-500 t.p.h. The wheel is mounted on a carriage which moves from side to side across the storage pile as well as forward and into it.

As the buckets dig in, they remove a cross-section containing a portion of each of the various grades of materials in the pile. This is easily accomplished because the pile has been built up systematically of alternate layers of material varying in richness, chemical analysis, and size of particles. As the material is withdrawn from the pile, it is dumped into a large hopper which discharges to a conveyor system leading to another part of the plant.

The blending process results in a uniform material which can be further crushed, ground, or otherwise processed with minimum production

difficulties and at maximum capacity and economy.

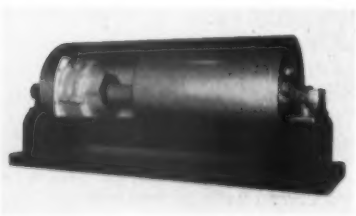
The bucket wheel can also be used to recover bulk material from live storage for transfer to conveyor, rail cars, or other transportation medium. (357)

● A complete new line of tubular wires for semi-automatic resurfacing is being marketed by the Hobart Brothers Company. The Hobart Manumatic or any type of welding machine of sufficient capacity to handle the high weld deposition rate and high duty cycle may be used as a power source (usually a 300 ampere welder or larger).

These tubular wires are fabricated for application through conventional semi-automatic welders which automatically feed the wire when the arc is struck. They can be applied with either the open arc or submerged arc process. The wires are of 7/64-in. diameter and are furnished in coils of 12-in. I.D. by 3 in. wide weighing approximately 50 lb. (358)

● A more compact conveyor drive has been developed by The Crichton Company and is available from 1 to 10 hp., in any one of 30 ratios ranging from 2½:1 to 215:1. The reducer is completely enclosed in a dirt-free drum from which it can be quickly removed by loosening six bolts. Drum diameters start at 12 in.

The system is also available for winch and hoist mechanisms, where the gearing can be incorporated in the drum. (359)

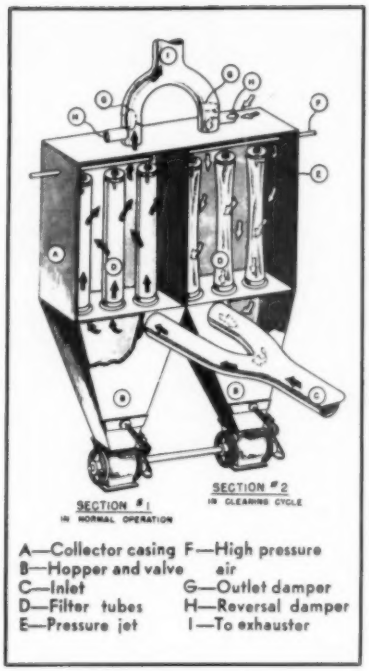


● Type CO dust collector by the Pangborn Corporation has been developed specifically to solve air pollution problems arising from high temperature fume and dust emissions.

The Type CO cloth tube collector is designed for use with glass filter fabric, although it may be used with any type of filter fabric. Use of glass permits efficient filtration at temperatures as high as 550 deg. F.

Dust is collected on the inside surfaces of the filter tubes which are cleaned by the "Pressure-Jet" method. A simple jet inside each filter tube provides short blasts of higher pressure air, alternating with a small amount of reverse airflow from the main fan. This partially collapses the tubes, cleans the filter surfaces, and deposits the residue into storage hoppers.

Intensity of the cleaning action may be regulated from a slight pulsation to the equivalent of mechanical shaking. There are no internal moving parts.



The completely automatic Type CO collector is controlled by an adjustable electric program timer and is composed of multiple compartments. The new collector may be adapted to virtually any application, and is particularly effective in cement kilns. (360)

● An aggregate hopper that can unload while underway and allows up to 1 ton extra payload to aggregate haulers has been introduced by the Fruehauf Trailer Company. The hoppers, in train operation, have a payload capacity of up to 28 tons when 76,800 lb. gross is allowed.

They have 40- by 50-in. air-operated clamshell gates which are electrically operated by the driver using cab controls. The gates can also be operated from the side of trailers.

The new unit has been standardized for production so that the interliners may be replaced with cement hopper cans to convert to cement hauling operations.

Both the semi and the four-wheeler have a capacity of 300 cu. ft. with aluminum interliners. (361)

Enter 57 on card, page 241 →

ALL NEW OLIVER OC-9

the tractor that TALKS for itself!

with TRANS-O-MATIC drive

Check all these exciting new features in an on-the-job demonstration!

NEW! Counter-rotating tracks
OC-9 turns on its own axis! Shortest turn of any crawler. Gets in and out of tight spots fast. Exclusive with Oliver on this size tractor. Also, spot turns and gradual turns.

NEW! Torque converter
Pull or push twice the pay loads at slow speeds. Eliminates all clutching and gearshift guessing. Uses most effective horsepower.

NEW! Power shifting
Shift from forward to reverse instantly. No clutching, no clashing of gears with all-hydraulic transmission. Four speeds forward, 0 to 5.94 m.p.h. Four speeds backward, 0 to 7.92 m.p.h.

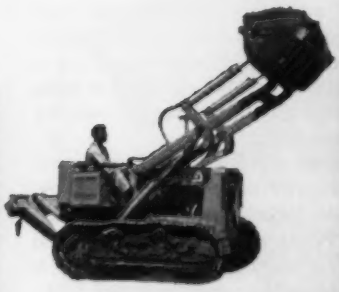
NEW! More efficient power
Get more work done more economically. New diesel engine with 62 gross h.p. plus new torque converter, gives you exceptional power efficiency.

NEW! Functional design
Truly modern from end to end, from the ground up. Easy-handling, finger-tip controls, with convenient power steering. Seat is offset for greater visibility. Oliver-matched equipment includes bull-dozer, angledozer, scarifier, winch and loader.

See for yourself what the husky, new OC-9 can do for you...how it'll step into those tough jobs and step up production. See your Oliver dealer for a convincing give-it-the-works demonstration and let the tractor do the talking!

All New OC-96 Crawler Loader

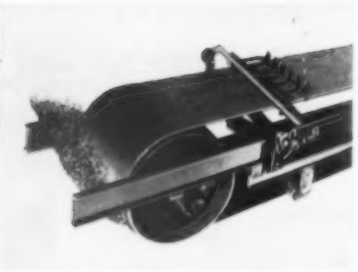
with low-profile design, greatest stability, maximum visibility. Completely Oliver-designed for high-speed digging and loading work. One-yard bucket. Has all the other features of the new Trans-O-Matic OC-9.



OLIVER

THE OLIVER CORPORATION
Dept. 2232, 400 W. Madison St., Chicago 6, Ill.

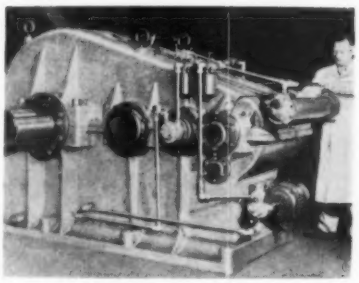
LOOK TO OLIVER FOR YOUR BEST BUY IN WHEEL AND CRAWLER TRACTORS



● Stephens-Adamson Manufacturing Company has developed a spring-type belt cleaner which is available for any belt width. The belt cleaner removes material which adheres to the returning belt and would otherwise be ground in by snub pulley and return rollers.

The cleaner consists of a row of thin, spring steel wiper blades, each with an individual pressure spring. The wiper blades are set perpendicular to the belt surface, but diagonal to travel of the belt. Pivoted connections between blades and springs permit the wiping edges of the blades to seat uniformly on the surface of the returning belt. As the belt passes over the cleaner, each blade wipes a path clean and dry. As blades overlap, the entire carrying surface is wiped clean. **(362)**

● A new series of quadruple-reduction helical speed reducers is announced by the Philadelphia Gear



Corporation. Because of precision grinding, the units feature increased load carrying capacities, and minimum noise, vibration, and backlash.

The new speed reducers are available in A.G.M.A. ratios of 106:1 to 650:1 and are rated to 815 hp. with an efficiency rating of 95 percent. They are designed to meet A.G.M.A. standards for the most severe overhung load and shock conditions. **(363)**

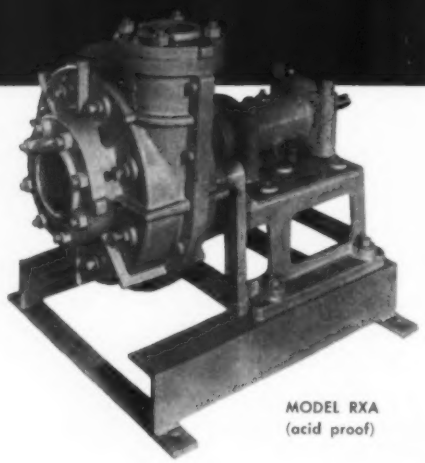
● A conveyor belt tension and alignment adjusting device which replaces conventional screw take-ups with hydraulic pressure has been developed by the Western Conveyor Company.

Called the Schrock Hydraligner, the adjuster consists of a hydraulic cylinder attached to a bearing housing. Positioning pressure is applied with an ordinary grease gun and is held by positive-action piston seals.

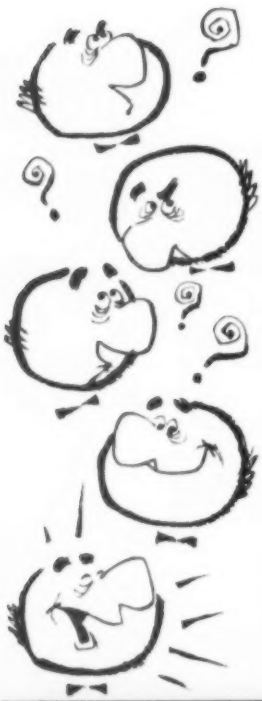
This device may be operated safe-

NEW!

PERFORMANCE-PROVED CERAMIC-LINED SAND PUMP



MODEL RXA (acid proof)



ARE YOU USING pumps for transferring fines? Is the volume in the range of 110′ head-150 GPM to 70′ head-600 GPM?

ARE YOU TIRED of replacing impellers, liners, sheils, sleeves, seals, bearings, shafts, bolts, nuts, gaskets, etc., every few months?

ARE YOU WISHING someone would produce a pump worthy of your expectations? Something that would hold up for say — 14 months? 18 months? 2 years!

YOU WILL FIND the ultimate in wear resistance in ceramic lined pumps using silicon nitride bonded silicon carbide wear parts.

SOUND EXPENSIVE? Not at all. Cost is comparable to alloyed iron or rubber lined pumps.

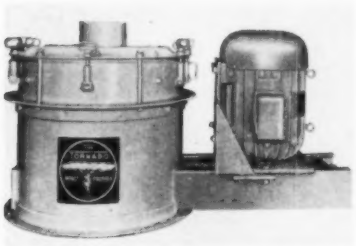
For additional information on the new MODEL RXA Ceramic-Lined Sand Pump, write:

The KANSAS CITY HAY PRESS COMPANY
801 Woodswether Road Kansas City 6, Missouri

Enter 58 on card, page 241

ly while the conveyor equipment is in motion, providing more perfect alignment. It is adaptable to remote control through hydraulic lines to easily accessible stations.

The Hydraligner is available in shaft sizes from $1\frac{15}{16}$ through $3\frac{7}{16}$ in. Standard adjustment stroke lengths are 14, 18, 24, and 36 in. **(364)**



● The Tornado square impact crusher, a product of the Werco Steel Company, is manufactured in four basic sizes of 3, 4½, 5, and 6 ft., with the smallest size crusher rated at 25-60 t.p.h. and the largest rated at 150-300 t.p.h.

All replacement parts are easily accessible by simply lifting the cover. Impeller shoes and breaker plates are easily replaced by one man in minutes without the aid of a tool.

The breaker plates and impeller shoes are made of highly abrasive-resistant metals, brinelling to 650, making possible the use of the Tornado in slag, trap rock, and gravel applications. The Tornado has also proved successful in making sinter stone for the steel industry. **(365)**

● The W-12 Terraload'r, the biggest, most powerful model in its line of four-wheel-drive tractor shovels, has been introduced by the J. I. Case Company. This loader has a carry capacity of 9,000 lb. and a breakout capacity of 23,500 lb. Its standard loader bucket is S.A.E. rated at 2½ cu. yd. Optional buckets with S.A.E. rated capacities of 1⅝ and 3½ cu. yd. are also available. Control is hydraulic.

Design of the unit integrates the engine, a Case 120-hp. diesel, and tractor shovel into a single unit.

Features include torque converter drive, constant mesh transmission that provides speeds from 0 to 23 m.p.h. in either direction through three speed ranges, power transfer differential for all four drive wheels, power shift, power steer, and power brakes. **(366)**

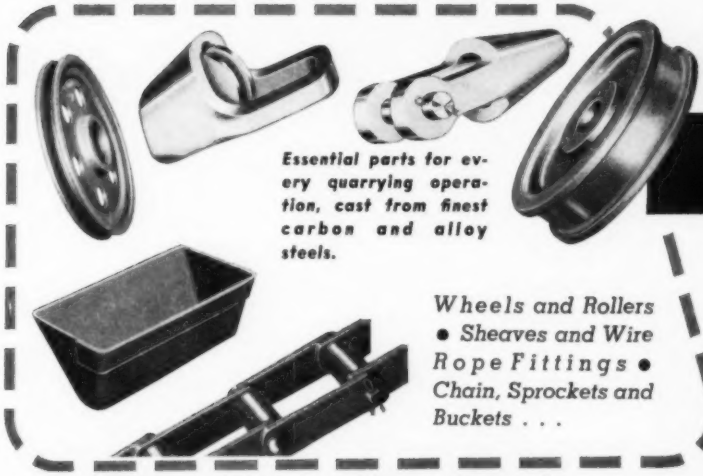
● Amsco 53, a manual, tubed electrode for general purpose hardfacing, is now available from the American Manganese Steel Division, American Brake Shoe Company.

Easy to handle, the new rod features a stable, low-spatter arc with smooth running, unusual speed, and excellent build-up.

Specially alloyed for use where both impact and abrasion are

FARRELL-CHEEK

ALLOY CAST STEEL MINE CAR WHEELS AND HIGH PERFORMANCE PARTS



Essential parts for every quarrying operation, cast from finest carbon and alloy steels.

Wheels and Rollers • Sheaves and Wire Rope Fittings • Chain, Sprockets and Buckets . . .

MADE OF F85 ALLOY CAST STEEL

Far from ordinary, these highly specialized mine car wheels, electric furnace cast of F85 alloy steel, are establishing new performance and service life records. A Brinell of 350-400 is provided on treads and flanges with a high degree of ductible touchness in hubs and webs.

You'll want complete information on all F-C wheels and parts for quarrying. WRITE TODAY!

Finest Name in Cast Steel!

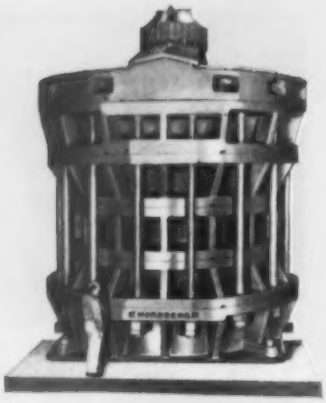
FARRELL-CHEEK STEEL CO.

102 LANE STREET, SANDUSKY, OHIO

OUR Fiftieth YEAR

F85 F-C

Enter 59 on card, page 241

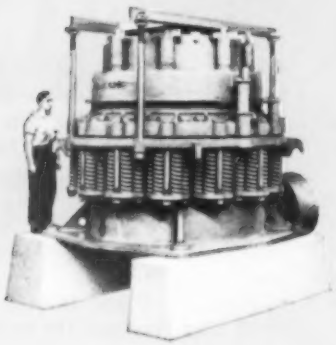


SYMONS® PRIMARY GYRATORY CRUSHERS

These gyratory crushers are built for big tonnage, heavy duty primary breaking in 30″, 42″, 48″, 54″, 60″ and 72″ feed opening sizes, for capacities up to 3500 or more tons per hour.

SYMONS INTERMEDIATE CONE CRUSHERS

General duty machines for producing large quantities of product material with a minimum of fines, from fairly uniform feed, requiring a reduction of only one or two sizes. Available with 22″ and 30″ crushing heads, in capacities to 100 tons per hour.

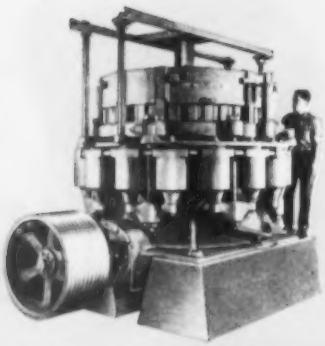


SYMONS CONE CRUSHERS

For secondary and finer reductions, Symons Cone Crushers, in both Standard and Short Head types, are built in sizes ranging from 22″ to 7′ in diameter, for capacities from 6 to 900 or more tons per hour.

NORDBERG GRINDING MILLS KILNS AND COOLERS

To meet specified conditions for wet or dry processing in the manufacture of cement and numerous other processes where friable material must be comminuted to fine sizes. Mills include Rod, Ball, Pebble, Tube and Compartment types in sizes from 6′ to 13′ diameter and up to 50′ in length.



NORDBERG GYRADISC® CRUSHERS

Built to supplement the world-renowned Symons Cone Crushers, the Nordberg Gyradisc provides a medium for the profitable production of sand sizes of specification material.

NORDBERG ENGINES

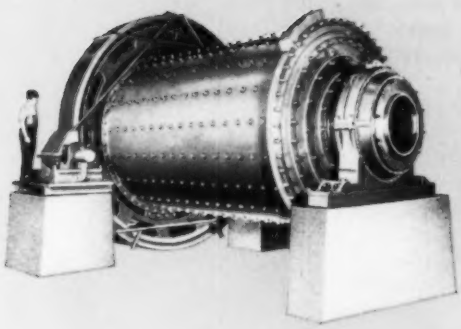
Ranging from small "packaged" power units to large stationary engines for base load and standby power, Nordberg engines are built in a wide range of types for Diesel, Duafuel® and Spark-Ignition Gas operation, in sizes to over 11,000 horsepower.

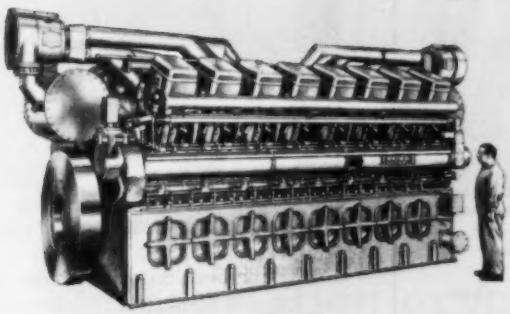
IN PORTABLE PLANT SERVICE

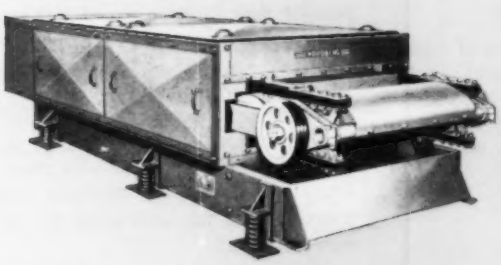
Increasing numbers of portable plant operators are now using Symons Cone Crushers for big capacity of fine product . . . such as this Cedarapids® portable intermediate crushing plant utilizing a 4′ Symons Cone Crusher.

SYMONS VIBRATING SCREENS AND GRIZZLIES

Built in a wide range of types and sizes to meet practically all sizing requirements from heavy duty primary scalping to many fine screening applications.







For the Construction Projects of the World

NORDBERG MACHINERY

produces BIG TONNAGES of Specification Aggregate Bituminous Materials Crushed Sand and Cement

NOW—more than ever before—as you plan production to meet steadily increasing demands for big tonnages of specification aggregate, bituminous materials, crushed sand, and cement—*your best buy is Nordberg*. Here is machinery that is used throughout the cement, aggregate and construction industries for maximum, continuous production at lowest possible cost.

With dependability proved through use, Nordberg machinery is on the job wherever in the world leading producers and contractors are engaged in the construction of highways, dams and hydro projects, bridges, as well as commercial and residential buildings.

Whether you are a contractor, operator, construction superintendent or design engineer, you will find it profitable to specify and use Nordberg Crushing, Screening and Grinding Machinery for stationary and/or portable service.

NORDBERG MFG., Milwaukee 1, Wisconsin

SYMONS . . . a registered Nordberg trademark known throughout the world.

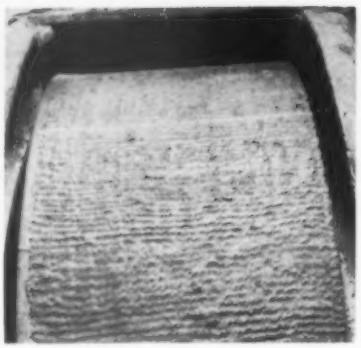
NORDBERG

©1959, N. M. CO.

Q-159

ATLANTA • CLEVELAND • DALLAS • DULUTH • HOUSTON
KANSAS CITY • MINNEAPOLIS • NEW ORLEANS • NEW YORK
ST. LOUIS • SAN FRANCISCO • TAMPA • WASHINGTON
TORONTO • VANCOUVER • JOHANNESBURG • LONDON • MEXICO, D.F.

Enter 60 on card, page 241



problems, Amsco 53 has proven excellent on crusher rolls (see illustration), hammer mills, scraper blades, dipper teeth, and similar applications. (367)

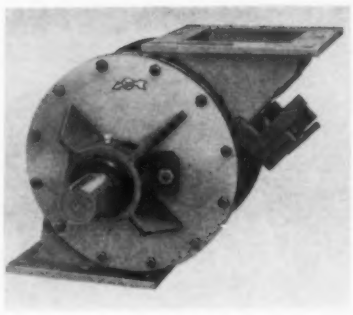
● Martin Engineering Company introduces the DHE-111 Motomagnetic electric vibrator, which offers stepless speed control from 2,000 to 10,000 v.p.m. while in operation. The unit features a new mounting aspect which puts the vibrational orbit close to and parallel with the hopper wall, eliminating the need for reinforcing plate on the thinnest hopper materials. Quick clamp mounts can be furnished for jobs in which the vibrator must be moved from place to place.

Designed for quiet, powerful vibration on difficult installations, the DHE-111 is used to move and sift bulk materials of every type and to insure a constant flow of materials from bins and hoppers for concrete molds. The unit has forced air cooling and fully enclosed electrics. Operation is on 115-v. a.c.-d.c. through a simple rheostat. (368)

● The Young Machinery Company, Inc., introduces a new non-jamming, side entry rotary air lock feeder for handling free-flowing cubes, pellets, chips, flakes, prills, etc.

Design eliminates adjustable or flexible tips and the unit is guaranteed not to crush or grind friable materials. All units are furnished with packing gland seals and outboard anti-friction bearings.

Standard units are available in sizes 2, 2½, 3, 4, 5, 6, 7, 8, 10, 12, 14, 16, and 18. It is also furnished as a Blow-Thru unit in sizes 4, 5, 6, 8, 10, 12, and 14. Both units are made in carbon steel, type 304 stainless steel, type 316 stainless steel, Inconel, Monel and nickel. (369)



● Mobile Drilling, Inc., has developed an air-powered blast hole drilling attachment for its B-52 Pacemaker. Adapted to the B-52, the unit is capable of drilling up to 30 ft. per hour through hard rock with 4½-in. bits.

The combination unit includes an air actuated hammer drill, compressor, dust collector, B-52 hydraulic rotary drill, and a four-wheel-drive carrier. (370)

● A new lightweight tandem suspension unit for trucks and tractors is available from the Transmission and Axle Division of the Rockwell-Standard Corporation.

Available in two versions, the all-steel unit provides weight savings up to 230 lb., and, equipped with aluminum frame support brackets and torque rods, an additional 80 lb. may be saved.

Design requires minimum mainte-

HAYWARD CLAMSHELL BUCKETS

WORK LONGER,
WORK FASTER,
WEAR LESS!

Designed with rugged, one-piece alloy shells ... wide type, cast manganese steel cutting edges ... smooth shell interior for fast, capacity loads and easy discharge ... manganese bushings ... diagonal truss brace to keep shell in line ... has no side sway or back lash ... *plus many other cost-cutting design features!*

Get complete details. Write today for illustrated bulletin.

THE HAYWARD COMPANY

50 CHURCH STREET, DEP'T P, NEW YORK 7, N. Y.

Builders of Better Buckets Since 1888

Enter 62 on card, page 241

Enter 63 on card, page 241 →

Photographed on location by Jack Beech.

Guesstimation or Automation?

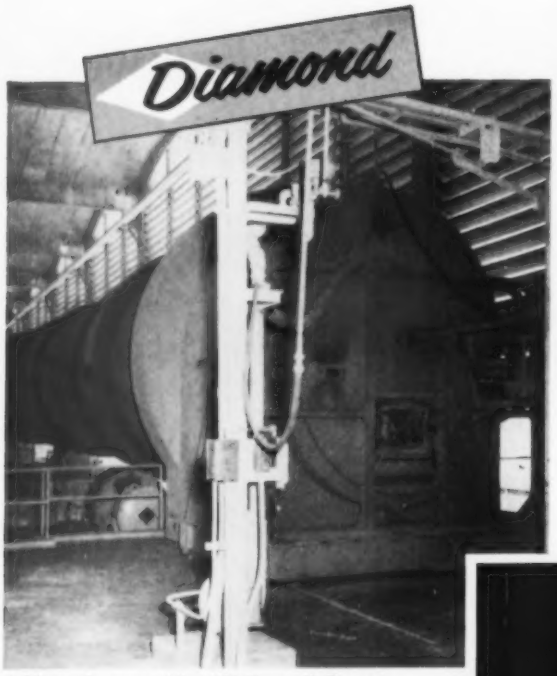
While automation makes money for some manufacturers, others are still operating on intuition and "guesstimation."

The result? Many portland cement buyers are finding wide variations in quality—and many producers are noting wide variation in profits.

There probably is no more economical way to meet the requirements of your customers for high quality cement . . . no better way to meet demands for bag-to-bag uniformity . . . no faster way to modernize and compete in today's market . . . than with accurate and dependable measuring and control systems by Leeds and Northrup, *the most experienced* supplier of instrumentation to the portland cement industry.

Don't depend on "guesstimates," *be sure.* Let your L&N Field Engineer review your process and problem. Let him suggest from the wide range of L&N products, the *right* system to improve your product and process. Call him at your nearby L&N office or write 4977 Stenton Avenue, Phila. 44, Pa. Ask for our booklet, "Modern Practices in Rotary Kiln Instrumentation."

LEEDS Instruments LN NORTHRUP Automatic Controls • Furnaces



▲ View of cement kiln. "Utiliscope" Camera may be seen at right side.

▲ Close-up of "Utiliscope" Camera watching interior of kiln. Air cooled "Utiliport" protects lens against high temperature.

▼ Control Room. Operator sees kiln interior on TV monitor.

Modern Cement Plants Produce

MORE UNIFORM CEMENT CLINKER with DIAMOND "UTILISCOPE" TELEVISION

Camera Operates Efficiently in High Temperature Area . . . Provides Economy and Better Plant Layout

Close observation of the interior of the kiln is important in production of uniform high quality cement clinker. But to station an operator at an observation port on each kiln is inefficient use of man power. Also placing the instruments and controls in that location hinders good plant layout.

This problem was solved in this plant with a "Utiliscope", Diamond heavy duty Television System. A camera was installed on each of the two kilns to "see" the interior. Monitors in the air conditioned control room enable the operator to keep close watch on the burning conditions. He can continually check on the formation of clinker. Instruments and controls are also grouped in this room, so he can make immediate corrections when they are needed.

High ambient temperature (up to 2100°F at the viewing port) was no serious problem. The Diamond air cooled "Utiliport" provides adequate protection to the camera lens. The "Utiliscope" camera, which is built for tough conditions, is air cooled in this installation.

Diamond Heavy Duty Television is built to stand severe service. High temperature, dust, dirt, vibration, etc. do not impair its dependable operation.

This is only one of many ways in which the Diamond "Utiliscope" can save money, improve operation, and help produce a better product. It has been proved in a wide variety of plants and applications.

Explore the possibilities of "Utiliscope" for *your* plant. Write us for more information.

DIAMOND POWER SPECIALTY CORP.

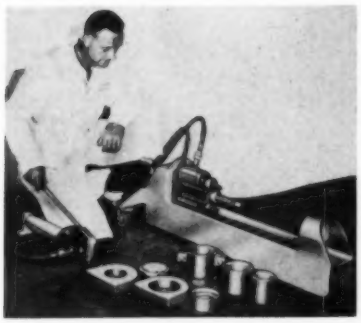
LANCASTER, OHIO *Diamond Specialty Limited, Windsor, Ontario*

8297

nance and allows easy removal of either axle. Rockwell's "cradle ride" design is utilized to keep the load stable and to permit safe, trouble-free operation. (371)

● Rollway Bearing Company, Inc., has in production a growing line of sealed bearings recommended for use in high load applications in

abrasive environments. An example of the line is this life-lubricated sealed roller bearing which has a capacity of 13,400 lb. and an I.D. of 1.750 in. It has 21 crowned rollers and features a buna-N, steel backed, rubber bonded seal that prevents dirt and dust from abrasive action on the rollers and races. (372)



● Owatonna Tool Company offers a new hydraulic press for removing and installing equalizing-beam center and end bushings on Hendrickson tandems, used on such leading makes of heavy-duty trucks as Chevrolet, Diamond T, Dodge, Ford, FWD, General Motors, International Harvester, Mack, White, and others.

The press, OTC No. Y800-A, consists of a press frame mounted on casters, seven special adapters for removing-installing applications, and a 30-ton capacity OTC Power-Twin "center hole" hydraulic ram and pump assembly.

Both center and end bushings can be serviced by the new press. The center bushings can be serviced without removing the tires or wheels, and without removing the entire beam from the truck.

The truck rear cross member is raised and lowered by a railroad jack to permit the OTC press to be aligned with the equalizing beam bushing. Special adapters are then positioned for the removing and installing applications. (373)

● New to the line of equipment produced by the Henry Manufacturing company, Inc., is a reverse-mounted loader, the RL-400 Series. Designed primarily for stockpile work, the RL-400 features a self-loading bucket of 1-cu. yd. capacity which is loaded by hydraulic power and does not depend on the traction of the

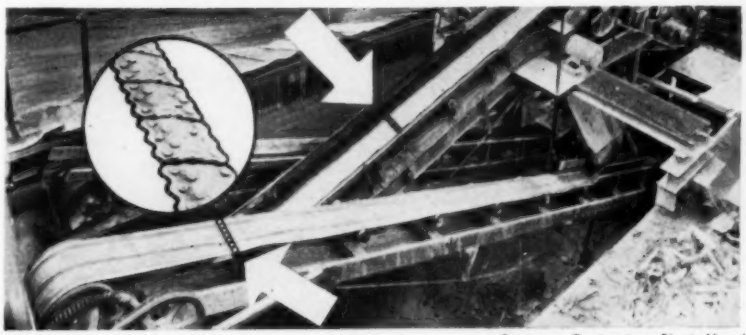
tractor. A specially-designed control valve enables the bucket to self-level.

The RL-400 is designed to mount on utility tractors and has a lifting capacity to full height of 3,000 lb. and a breakaway capacity of 4,500 lb. (374)

● Introduction to this country of the Vonarx-Pistol, a Swiss-made tool for de-rusting, cleaning, and de-scaling equipment, is announced by the Swissair Tool Corporation.

The Vonarx-Pistol operates on compressed air from any industrial

"We tried them all— then standardized on CRESCENTS"



Camarco Contractors Plant No. 1

"Our conveyor belts take a terrific beating and only a rugged fastener will hold them. We found that CRESCENT plates did a superior job, and because of the speed with which they can be attached with CRESCENT self-clinching rivets . . .

WE CUT OUR DOWN TIME IN HALF!"

NO HOLES TO BORE • NO TOOLS NECESSARY • A HAMMER IS ALL YOU NEED!

CRESCENT BELT FASTENER CO.

381 Fourth Ave., New York, N. Y.

TORONTO, CANADA — BIRMINGHAM, ENGLAND

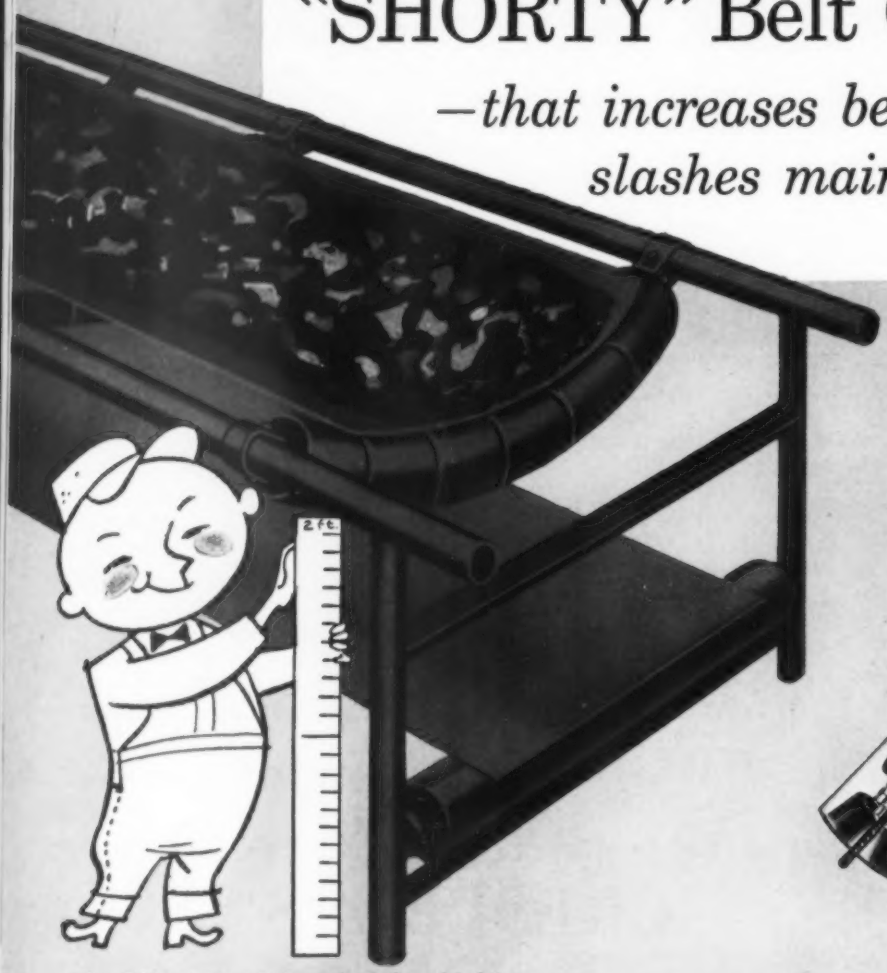
Distributors throughout the World

Enter 65 on card, page 241

See the NEW McNally Pittsburg

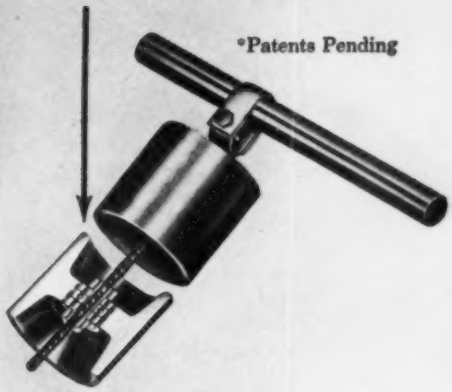
"SHORTY" Belt Conveyor

—that increases belt life, slashes maintenance cost!



Exclusive NEW Patented Cradle Idler*

*Patents Pending



The "Shorty" unit is only 2 feet high!

The new "Shorty" underground conveyor featuring the new McNally Pittsburg Cradle Idler is ideally suited for use in limited working areas. Vertical supports are only 2 feet high. For extremely low clearance installations these conveyors can be made with 3″ diameter rollers (instead of the standard 5″), and the average over-all height can be as little as 17″ for a 36″ belt, using a 30° deep trough idler construction.

For "Do-it-yourself" construction, the H-frames and stringers (which may be either wire rope or pipe stringers) are shipped disassembled and may be assembled in the field to fit any conveyor length necessary. It is only necessary to cut the stringers to the desired length, attach the Cradle Idlers and H-frames, and your conveyors are ready for operation.

The secret of the dramatically improved performance and lower maintenance cost of this new heavy duty conveyor is the *true catenary suspension* of the Cradle Idlers. Since the rollers *rotate* on the steel rope, dangerous "loping and harmonics" cannot develop. The 5″ rubber rollers, assembled on precision ground ball bearings, are prelubricated, lifetime sealed.

- Increased belt life—because full belt support is maintained under all conditions
- No creasing or cutting of belt
- Minimum maintenance

McNally Pittsburg Mfg. Corp., Pittsburg, Kansas

☐ Please send information on the new McNally Pittsburg belt conveyor.

☐ Have Sales Engineer call for further consultation.

Name_____ Title_____

Company_____

City_____ State_____

P

McNALLY PITTSBURG

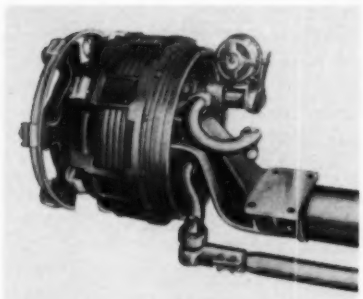
MANUFACTURERS OF EQUIPMENT TO MAKE COAL A BETTER FUEL

McNally Pittsburg Manufacturing Corporation—Manufacturing Plants: Pittsburg, Kansas • Wellston, Ohio Engineering and Sales Offices: Pittsburgh • Chicago Rio de Janeiro • Pittsburg, Kansas • Wellston, Ohio

type of compressor. The action produced by this tool is a spring loaded recoil movement of a series of hardened steel needles located in the head of the pistol.

A trigger on the handle releases a flow of air which sets the needles into rapid back and forth action. The air continues on through the pistol, blowing the working surface clean of particles. Because each needle operates independently from the others, the needles adjust to the contour of the surface being cleaned.

Normal working air pressure is 88 p.s.i. and air consumption is 12.5 cu. ft. Model IIB weighs 5½ lb.; Model IIIB, 8½ lb.; and Model IVB, 13 lb. **(375)**



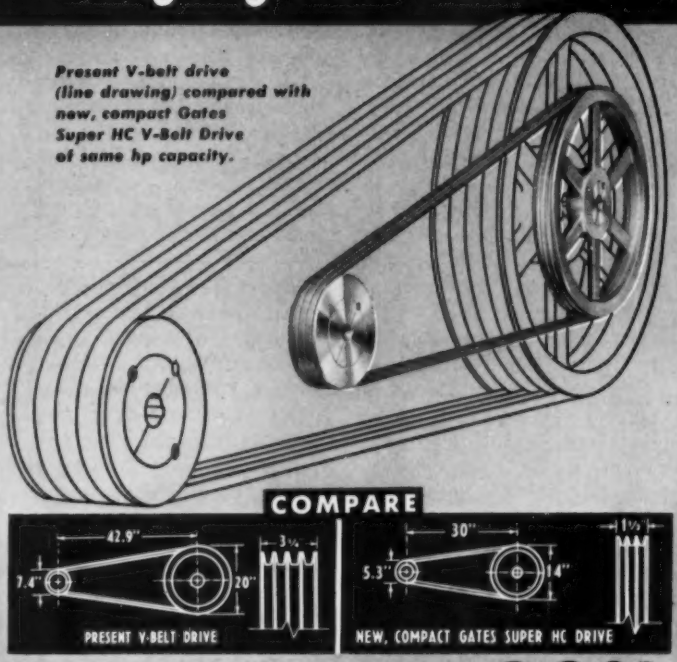
● New dual wheel front steering axles are offered by the Bolling Wheel & Axle Division. The dual wheel and axle assembly gives independent rotation of each of the four tires as well as braking on all tires from conventional-type braking equipment.

The axle is offered in two capacities—18,000 lb. for maximum payload, flotation, and safety on over-the-road equipment, and 30,000-lb. capacity for heavy front-end loadings on off-the-road equipment. Both axles have been designed to fit all truck manufacturers' specifications.

The kingpin is located in the wheel on the centerline of the inner tire, thus offering a form of "centerline" steering. The outer tire is then free to roll while steering due to the independent rotation of the dual tires.

With the new dual wheel front axle, front tire overloading can be eliminated and extra payload obtained on such vehicles as gravel trucks, cement mixers, and other special single unit vehicles. **(376)**

Designing NEW DRIVES?



Save up to 20%

with new high capacity V-belt drive

When you change the whole drive — both V-belts and sheaves — remember: The cost of a Gates Super HC V-Belt Drive is as much as 20% less than the cost of present V-belt drives of the same horsepower capacity.

A development of Specialized Research in the world's largest V-belt laboratories at Gates, the new Super HC V-Belt makes possible the most compact, lightest-weight, lowest-cost multiple V-belt drive you can put on any machine!

Cuts drive space as much as 50%

With Gates new Super HC V-Belt, sheave diameters and widths can be reduced 30% to 50%, center distances 20% and more. Bearing load is lightened and total space occupied by the drive may be cut as much as 50%.

"The Modern Way to Design Multiple V-Belt Drives" is an informative handbook on the Super HC Drive, available from your nearby Gates Distributor listed in the Yellow Pages of your phone book.

The Gates Rubber Co., Denver, Colorado

Gates Rubber of Canada Ltd., Brantford, Ont.

World's Largest Maker of V-Belts

TPA 439

Gates SUPER HC V-BELT Drives

Enter 67 on card, page 241

← Enter 66 on card, page 241

Washington News Letter

(*Continued from page 11*)

tions are for more than 1,200,000 starts in 1960, with a drop to 1,100,000 a distinct possibility.

This prediction is in contrast to an estimated need in 1960 for 1,400,000 new dwelling units.

The new housing demand will come from families who move out of old dwellings because these are too small to meet their expanding needs or because their incomes have risen to the point at which they not only want but can afford better, more luxurious housing.

The principal pinch is expected in the $10,000 to $20,000 price range. Here, VA mortgages which carry 5¼ percent interest rate have become so hopelessly unattractive to lenders that they are virtually unobtainable. Even FHA mortgages, which carry a 5¾ percent rate, cannot be obtained except at substantial discounts which result in real interest rates up to and even beyond 6 percent. In New York, Pennsylvania, and New Jersey, where interest rates beyond 6 percent are regarded as usurious and, therefore, not allowed under the law, home mortgages may become unobtainable. If that were to occur, the home building industry would shut down.

In an important political year, such as 1960, it is quite unlikely that the government would permit this to happen. But even the danger that it *could* happen is sure to influence construction plans. All told, the outlook is less than buoyant.

Labor Developments

(*Continued from page 13*)

employees or a labor organization in connection with a labor dispute involving the employer, except information for use solely in conjunction with an administrative or arbitral proceeding or a criminal or civil judicial proceeding.

5. Any payment (including reimbursed expenses) pursuant to an agreement or arrangement described in (4).

(Note: The labor relations consultant is also required to file a similar report on the same matters, so that the Department of Labor will be able to cross check the reports. Here, again, the same difficulties as those discussed above occur.

There is, however, another question as to whether attorney's fees are included under this provision. Generally, these are exempted on the ground that they are related solely to administrative, arbitral, civil, or criminal proceedings. However, if an attorney also acts as a labor relations consultant with respect to organizing drives, contracts, and other negotiations, payments to him may be covered.)

While the precise form for these reports has not yet been issued, they will require at least the following information:

1. Date and amount of each covered payment, loan, promise, or agreement.

2. Name, address, and position, if any, in any firm or labor organization of the person to whom the covered payment was made.

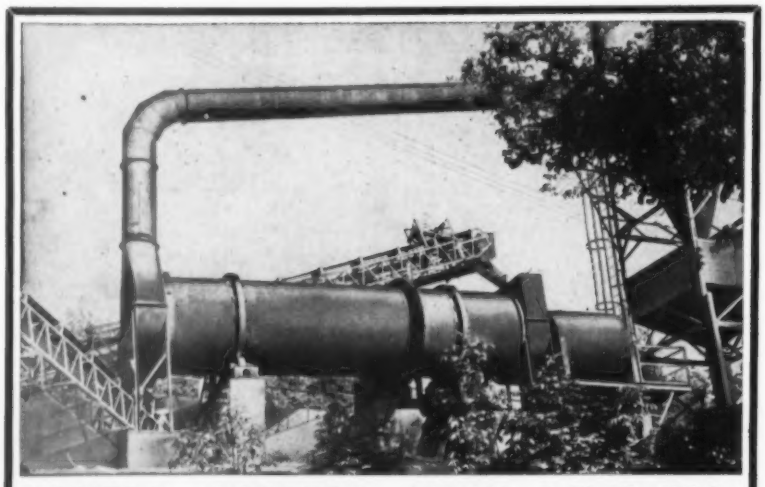
3. Full explanation of the circumstances of covered payments, including the terms of any arrangement under which they were made.

Certainly these requirements are burdensome, and meeting them, in some cases, may even prove embarrassing. However, they are probably the least that could be required of employers in view of the very substantial reporting burdens which have been placed on unions. Moreover, they are necessary to check the accuracy of certain very important parts of the unions' reports.

Employers should consult their attorneys promptly to make certain that they will make these reports properly and on time.

As a result of the recently enacted labor law the labor relations issue is no longer a private matter. Employers' reports will be placed on public view, along with those filed by unions and labor relations consultants.

One dividend which employers will get, but only if they apply for it, will be a look at the reports filed by the unions with which they deal. These may be very revealing. They will be obtainable from the U. S. Department of Labor in return for the payment of a service fee, probably a worthwhile investment.



DRYERS • COOLERS • KILNS

This 7 ft. x 30 ft. Rotary Dryer removes excess moisture. Dryer is oil heated.

Over 60 years of experience and a thorough knowledge of raw materials and their properties have resulted in McDermott's ability to design and build for you the most efficient equipment for your specific needs. You'll save money on initial installation costs . . . and, more important, on maintenance costs.

write for free brochure
12 pages of diagrams, descriptions and on-the-job photographs to illustrate the scope of our work.

McDermott BROTHERS CO., Inc.
Allentown, Penna.
Hillside 3-3231

Enter 68 on card, page 241

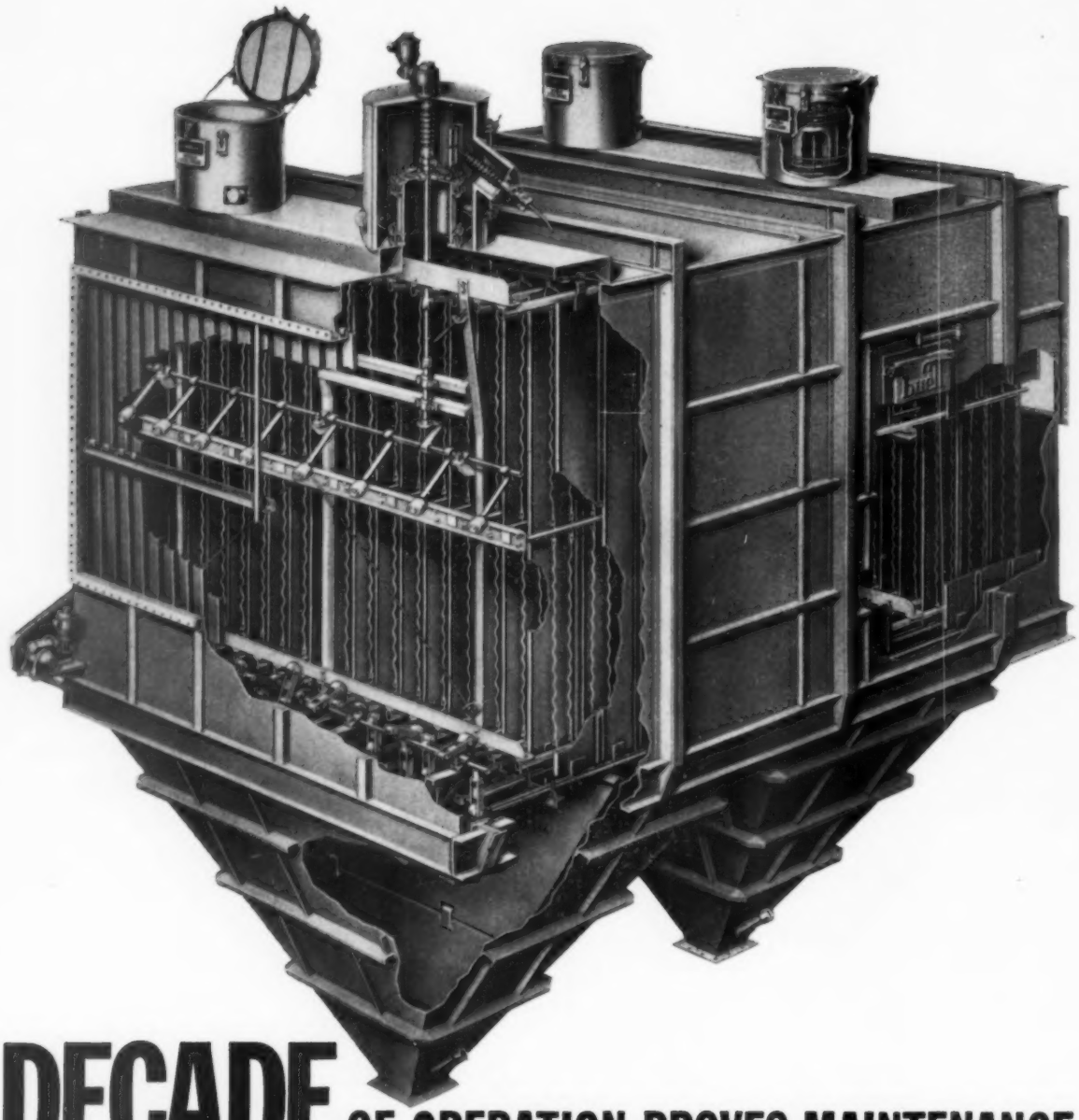
GET THE MOST

MISSION HAMMERDRIL FOR HARD ROCK DRILLING

The Mission HAMMERDRIL® is a "bottom hole" pneumatic impact tool for high speed, low cost drilling through the hardest rock. The design makes for economy: there are only two moving parts in the high pressure tool, and only three moving parts in the low pressure tool. Impact parts are heat-treated, high alloy steel; moving parts are friction and wear resistant. You can use it on your present rotary rig with suitable compressor capacity. Mission HAMMERBITS® feature massive tungsten carbide inserts which can be *resharpened in the field.* The Mission HAMMERDRIL® is sold and serviced throughout the United States. Write for more information on the savings you, too, can expect when you buy the *most.*

MISSION
MANUFACTURING CO.

MISSION MANUFACTURING CO., *P. O. Box 4209, Houston, Texas, cable address "MISSCO" • export office: 30 Rockefeller Plaza, New York*
In the United Kingdom: MISSION MANUFACTURING CO., LTD., *17 Hanover Square, London W. 1 England • cable address "MISSOMAN"*



DECADE OF OPERATION PROVES MAINTENANCE OF BUELL 'SF' PRECIPITATORS AVERAGE LESS THAN 2%

In 10 years of selling 'SF' electric precipitators, the number of replacement parts ordered from Buell has amounted to only 1.17% of the total sales! Even on emitting electrodes, usually the most vulnerable part of a precipitator, replacement has amounted to less than 1% of the original number installed. What do these extremely low percentages mean? Exceptionally low maintenance costs, for one thing, continuous high-efficiency operation, fewer shutdowns and process interruptions. Buell self-tensioned emitting Spiralectrodes eliminate vibration found in weight-tensioned wires. Buell's low maintenance precipitators will provide you with the most satisfactory operating results. They're backed by 25 years of experience in dust collection, with the practical know-how gained on hundreds of installations. Write for descriptive literature. The Buell Engineering Company, Inc., Dept. 18-A, 123 William Street, New York 38, New York. (Subsidiary: Ambuco Limited, London, England).

EXPERTS AT DELIVERING EXTRA EFFICIENCY IN DUST RECOVERY SYSTEMS.

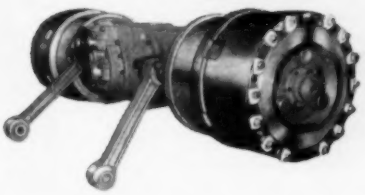
buell®

"Easiest handling 35-ton truck in the business!"

Why? 35 tons on a single rear axle truck is really something! That's a big load. But it means greater maneuverability—shorter cycling—easier spotting—savings of time which means greater tonnage production.

Consider too, the added advantage of minimized service requirements of the single axle over the tandem.

Want more facts on this model? Write for specifications.



The D-100-S triple reduction is a tried and proven, planetary-drive axle, backed by years of customer acceptance. Completely designed and built by KW-DART, it has unusually high capacity and long, trouble-free service life.

KW-DART TRUCK CO.

Division of Pacific Car and Foundry Company

1301 North Manchester Trafficway
Kansas City 41, Missouri, U.S.A.

P.O. Box 321
185

Enter 71 on card, page 241 ➔

PROCEED, DEFER OR MODIFY?

Kaiser Engineers can help you decide

Objective analysis is vital to sound decision on new plant or expansion projects. Feasibility studies, economic analyses and site evaluations are yours by an outside, impartial firm when Kaiser Engineers is selected to help you decide when, how and where to proceed.

These services are in addition to the design and construction of major facilities for the Minerals industry.

KE offers complete, one-company, integrated service from concept through construction—plus world-wide experience and the ingenuity to build quickly, within budget.

KAISER ENGINEERS

Division of Henry J. Kaiser Company
Oakland 12, California
Pittsburgh, Washington, D. C., Chicago, New York

• KE projects include work in Australia, Brazil, Ghana, India, New Zealand, as well as Canada and the United States. Assignments include iron ore concentrating plants, cement plants, bauxite and alumina processing plants and diatomaceous earth facilities.

5458-M

30" discharge conveyor loading gravel into truck.

1750 Tons ¾" Road Gravel Per Day—*97% Crush with 90% Passing ¾" Screen*

Here's where the Diamond produced base fill was used . . . Route 23 overpass at Route 41, Fond du Lac, Wisconsin.

Ask for illustrated catalog D-104

Diamond makes everything for the aggregate producer:

Jaw Crushers • Roll Crushers • Conveyors • Screens and Washers • Feeders and Bins • Portable and Stationary Crushing Plants for Rock and Gravel.

When awarded the contract to supply base fill for an overpass in Wisconsin, Robert M. Hinze, Lannon, Wisconsin, faced the problem of how to do it fast and profitably.

Diamond type "66" portable crushing plant was the efficient and cost-cutting answer for turning pit run material into ¾" road gravel. The "66" is tough! Its heavy duty 10" x 36" jaw crusher plus 30" x 20" roll crusher crushed 97% of the pit run material. 90% passed through the 4' x 10'—2½ deck ¾" vibrating screen.

10 to 12 trucks were used with capacities varying from 8 to 15 tons. The largest was loaded in the average time of 4½ minutes. After loading, the trucks traveled 10 miles to the job site. Even with the 10 mile run the Diamond "66" output averaged 1750 tons of ¾" gravel per day. Field performance like this proves that the Diamond "66" has what it takes to crush and load fast and profitably.

You too can get the same outstanding performance from a Diamond portable crushing plant. Your Diamond distributor will be happy to give you full details.

DIAMOND IRON WORKS
DIVISION
GOODMAN MANUFACTURING COMPANY
Halsted Street and 48th Place • Chicago 9, Illinois

DIAMOND

KENNEDY SERVES

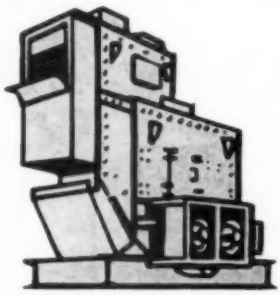
LAKE ONTARIO PORTLAND CEMENT COMPANY

This unique plant at Picton, Ontario, manufactures 1.8 million barrels of cement annually and also produces 750 tph of graded aggregate, either independently or concurrently with the cement operation. KENNEDY VAN SAUN designed and furnished all of the crushing and grinding machinery as well as the principal cement producing equipment for this plant.

KENNEDY Gearless Gyratory Crushers

1—48" Primary—at the quarry.
1—20" Intermediate—in the crushing building.
2—#49½ Tertiaries—in the crushing building.
1—37½ Clinker Crusher—after the kilns.

KENNEDY Impact Crushers



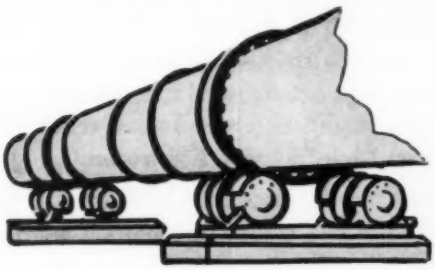
2—36" x 48" Senior Cubers—in the crushing building.

KENNEDY provides the *most complete* cement plant service to be found anywhere. KENNEDY knows cement manufacture; KENNEDY maintains a staff of cement specialists; KENNEDY designs and manufactures the finest in cement manufacturing machinery.
Send for more information on these services and equipment. For the complete story on the Lake Ontario Portland Cement Co., ask for Bulletin 59-B.

Primary & Secondary Gyratory Crushers • Jaw Crushers • Roll Crushers • Impact Breakers • Hammer Mills • Rod & Ball Mills • Kilns • Dryers • Screens

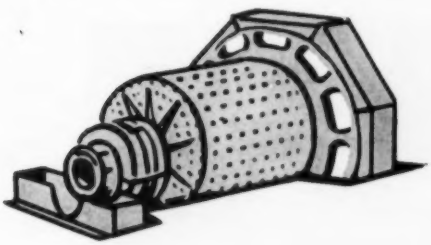
KENNEDY Dryer and Kilns

1—10′ x 50′ Clay Dryer.
2—11′ x 375′ Dry Process Cement Kilns.



KENNEDY Ball Mills

1—11′ x 20′ 2-compartment Raw Mill.
2—11′ x 20′ 2-compartment Finish Mills.
2—7′ x 12′ Coal Mills.

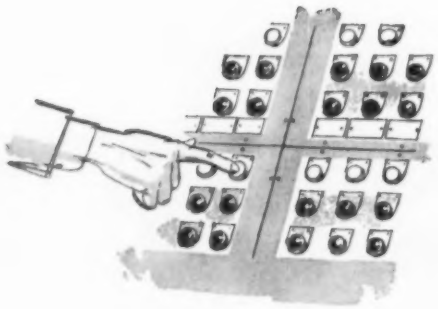


KENNEDY VAN SAUN

MANUFACTURING & ENGINEERING CORPORATION

405 PARK AVENUE, NEW YORK 22, N.Y. • FACTORY: DANVILLE, PA.

• Mechanical & Pneumatic Conveyors • Complete Crushing, Lime, Cement & Carbon Paste Plants. KENNEDY Research & Testing Service.



Fingertip control with

JEFFREY VIBRATING FEEDERS

...one man runs stone reclaiming operations, screening and washing plant, secondary crushers

Get details on how Jeffrey vibrating equipment and controls can simplify your materials handling job and save you money.

THIS quarry produces both high calcium limestone and dolomite products. From a strictly operating standpoint, *one man at a Jeffrey-designed control panel* runs the screening and washing plant, two secondary crushers and reclaiming operations monitored by 15 Jeffrey vibrating feeders.

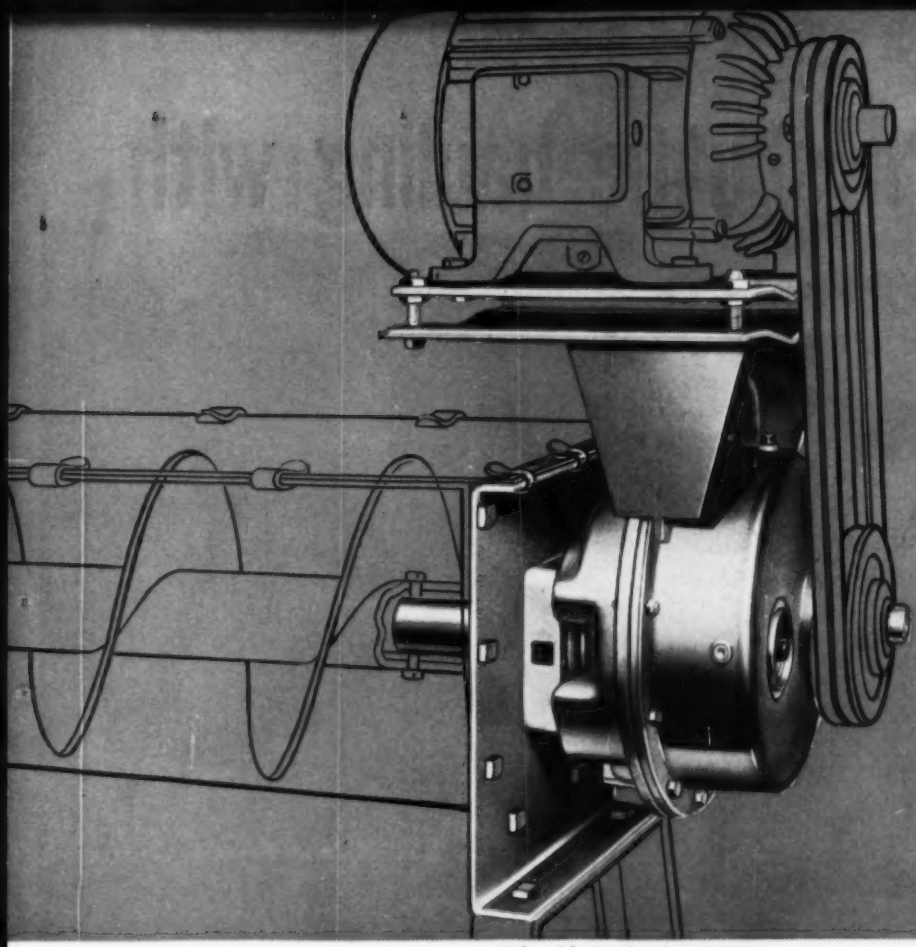
Jeffrey feeders under primary surge piles feed stone to the plant via reclaiming tunnel belt conveyor. Vibrating grizzlies with bars on 3″ centers allow fine material to fall to belt conveyors ahead of coarser stone, insuring longer life for the belt.

Jeffrey vibrating feeders were also selected for reclaiming finished stone from stockpiles. At these feeders, flow of stone actuates a swing baffle which signals control panel operator that material is flowing properly. Even blends of stone can be obtained by regulating flow from stockpiles to reclaiming belt ... through remote-controlled Jeffrey vibrating feeders.

Write for Catalog 930. The Jeffrey Manufacturing Company, 917 North Fourth Street, Columbus 16, Ohio.

CONVEYING • PROCESSING • MINING EQUIPMENT...
TRANSMISSION MACHINERY...CONTRACT MANUFACTURING

JEFFREY



NEW! FALK Screw Conveyor Drive

U.S. and Foreign Patents Applied For

—the drive our customers asked for

Our customers helped us design this new unit. We sent our men into the field to find out what our customers needed in a screw conveyor drive—then our engineers designed a new drive that offers the maximum of service, versatility, operating economy and long life. Here are some of its outstanding features:

A COMPLETE DRIVE: Saves engineering and assembly time. Six sizes to cover entire range—each with these ratios: — 4:1, 9:1, 14:1 and 24:1. Bolts to any standard trough end—eliminates trough end bearing. Eliminates drive shaft wobble. Efficient FALK single helical gears.

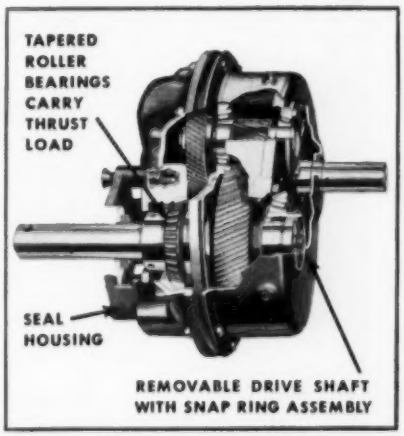
SEAL HOUSINGS: Choice of seals (neoprene or leather lip, felt or waste) to accommodate material conveyed. Space between trough seal and unit seal prevents conveyed material from reaching unit seal.

REMOVABLE DRIVE SHAFT: Snap ring assembly permits easy removal. Five sizes, from 1½" to 3 7/16".

TROUGH END: Can be fastened to any standard trough. Eight sizes, from 6" to 20".

ALL-STEEL MOTOR MOUNT: Saves costly engineering and installation time and costs; no motor plates to design or fabricate. Motor can be mounted in virtually any position. Pre-drilled to accommodate NEMA standard motors ½ to 30 HP.

AN IMPORTANT ECONOMY: Buy only what you need—the basic reducer alone, or with trough end and/or motor mount. For detailed information, contact your Falk Representative or Distributor—or ***write direct for Bulletin 7106.***



THE FALK CORPORATION, MILWAUKEE 1, WISCONSIN

MANUFACTURERS OF QUALITY GEAR DRIVES AND FLEXIBLE SHAFT COUPLINGS

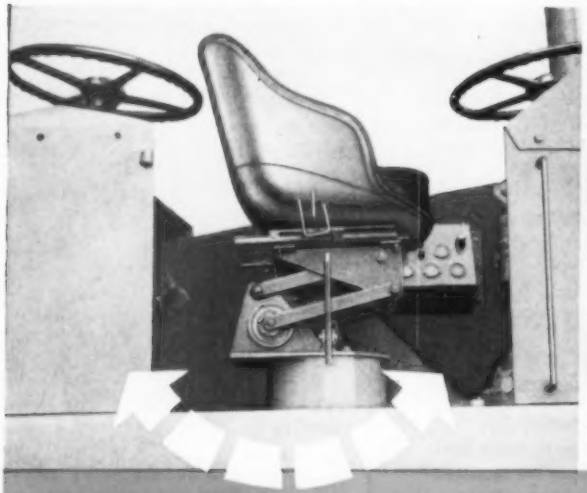
Representatives and Distributors in most principal cities

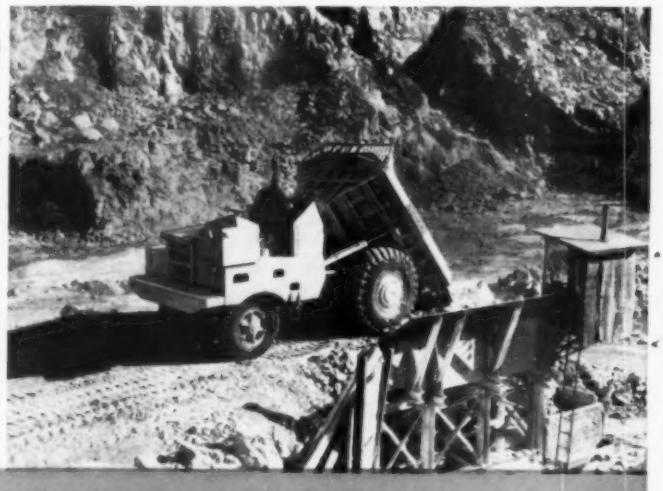
FALK is a registered trademark

FALK

...a good name in industry

Get no-turn shuttle-hauling with





2-WAY CONTROLS — Operator always faces direction of travel . . . swings around *without leaving seat.* Pivoting seat with 2-way controls lets him operate with equal ease, comfort, safety in either direction. These unique features plus Dumptor's equal speeds in both directions eliminate need for turning at the loader . . . on the haul road . . . or at the dumping area.

2 WAYS TO DUMP — During *instantaneous gravity dump* . . . operator releases fast by-pass of fluid in hydraulic cylinders . . . gravity takes over . . . dumps load instantly. Or, operator can apply *controlled gravity dump.* Hydraulic system acts as a retarder. Gravity actually tilts the body . . . hydraulic pressure controls the rate of discharge.

BIG 15-TON Koehring® Dumptor®...

dual controls . . . pivoting seat . . .
24 mph speeds in both directions

- **Two steering wheels, throttles, brake pedals . . . one each located at *both* operating positions of *pivoting* seat.**
- **Directional travel and speed-range lever, and dump controls, centrally-located for 2-way operation.**
- **Speed range selections up to 24 m.p.h. in either direction controlled by easy-acting hydraulic clutches.**
- **Constant-mesh transmission with smooth torque converter drive . . . hydraulic power steering.**
- **2 ways to dump — *instantaneous* gravity dump . . . or *controlled* gravity dump with hydraulic cylinders.**
- **30,000-lb. payload capacity . . . 28.5% gradability . . . big, safe, 4-wheel airbrakes, plus parking brake.**

See for yourself how this big 15-ton Dumptor, with its unique shuttle haul advantage, can profitably boost output in your open pit, or underground mine. Call your Koehring distributor for a demonstration . . . do it today!

2 SIZES — In addition to the new 15-ton, Koehring builds a smaller, companion model 8-ton Dumptor (above). It has a ton of strength for every ton of payload capacity . . . 6 H.P. for every ton of loaded weight . . . 3-speed travel in both directions . . . 1-second dump . . . many other cost-cutting advantages for heavy-duty off-road hauling. Put Koehring Dumptor on your work.

LOAD WITH KOEHRING — Get lowest costs on hauling, stripping, loading . . . team Dumptors with Koehring heavy-duty shovels. ½-yard 205 is shown above. Other sizes up to 3-yards . . . including high-lift stripping shovels. Fully convertible to clamshell, dragline, lift cranes. Also check sensational new Koehring Skooper — free-swinging, full-revolving, 2-yard loader.

Smidth

CEMENT COOLERS

The Smidth Cement Cooler, developed especially for cooling hot cement to temperatures acceptable for bulk shipment or immediate bagging, is externally water-cooled. The hot cement is introduced at the base and conveyed in a thin layer along the cooled interior surface to the top. High cooling efficiency is assured by the intimate contact of cement and the water-cooled surface.

The Smidth Cooler may also be used with many other similar dry pulverized materials.

Illustrated: Two 6′ 6″ diameter by 17′ 7″ high Smidth Coolers ready for shipment.

F. L. SMIDTH & CO.

INCORPORATED

11 WEST 42nd ST., NEW YORK 36, N.Y.

HERE'S THE FIRST SEMI-AUTOMATIC OPEN ARC WIRE FOR HIGH STRENGTH WELDS ON MANGANESE STEEL

WEAR-O-MATIC WH

Wear-O-Matic WH is the first 7/64" diameter open arc wire for semi-automatic application providing acceptable high strength properties for welding manganese attachments to manganese or carbon steels.

Here's a new wire providing welds of greater strength and ductility than 14% manganese weld metal that can be applied by the easier, more economical Wear-O-Matic open arc semi-automatic process. The balanced, high alloy content of the fabricated wire is sufficient to overcome the effects of dilution with manganese or carbon steel resulting in a weld deposit in the fully austenitic range. This, of course, provides a tougher, more crack resistant weld deposit.

Wear-O-Matic WH serves a dual role in that the exceptional physical properties that provide strong ductile welds also provide a tough, deformation resistant mass when used as a build-up alloy. The deposit develops a surface hardness of 47–48 Rc under impact providing exceptionally good wear resistance.

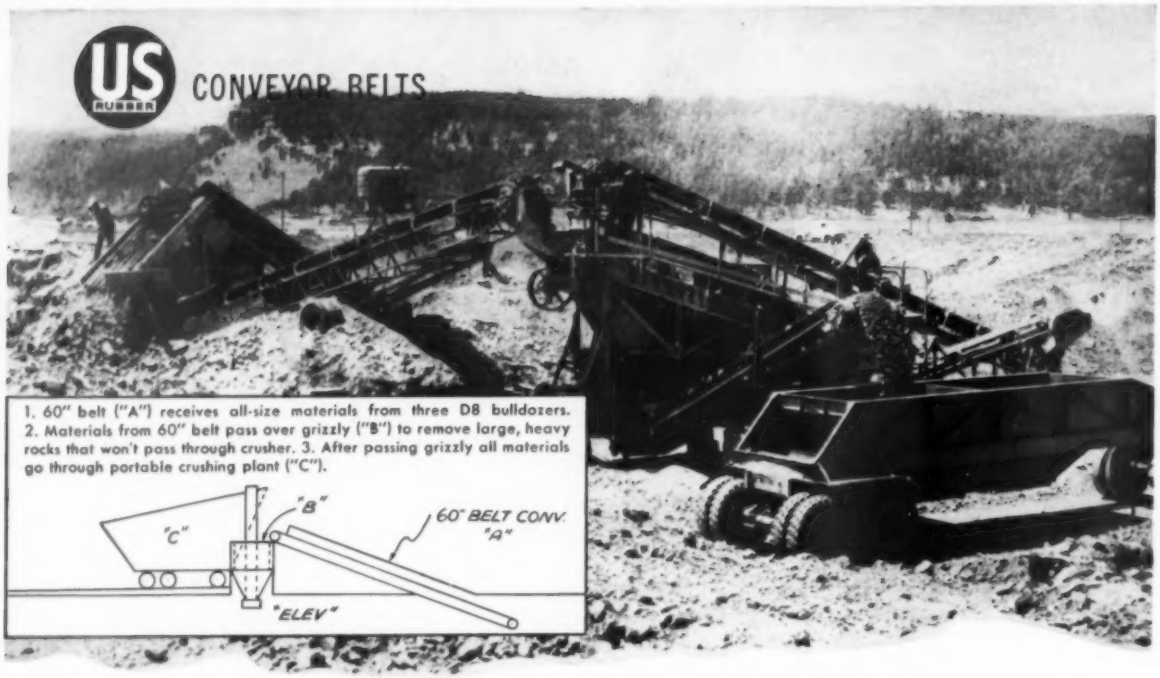
NEW NEW NEW NEW NEW

- **For impact and compression resistant attachment welds . . . specify WEAR-O-MATIC WH**
- **For tough, dependable build-up deposits . . . specify WEAR-O-MATIC WH**
- **For greater economy in all of your hard surfacing and maintenance welding, call on your Alloy Rods factory branch or distributor.**
- **Write for Bulletin HS232 for details and locations. Alloy Rods Company, P. O. Box 1828, York, Penna.**

NEW NEW NEW NEW

Alloy Rods Company

YORK, PENNSYLVANIA • EL SEGUNDO, CALIFORNIA


US RUBBER
CONVEYOR BELTS
1. 60" belt ("A") receives all-size materials from three D8 bulldozers. 2. Materials from 60" belt pass over grizzly ("B") to remove large, heavy rocks that won't pass through crusher. 3. After passing grizzly all materials go through portable crushing plant ("C").
"C"
"B"
60" BELT CONV. "A"
"ELEV"

Conveyor equipped with U.S. Matchless Belt increased production from 175 tons to 300 tons per hour

Such records as this have made U.S. Rubber the world's largest producer of conveyor belts.

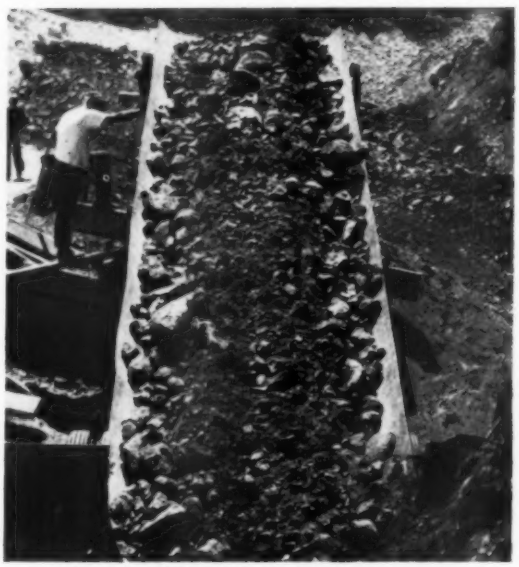
In this instance the "U.S." Belt helped increase production at the Carlson-Lien Company (Piedmont, S.D.), a supply firm currently producing road-building crushed rock and delivering it to highway projects. The belt is 60" wide, 35 feet from center to center (78 feet overall). "Our intention," says Bruce Lien, company secretary-treasurer, "is to replace all belts with U. S. Rubber Belts."

In this operation, bulldozers push the rocks to be processed into the loading point. The conveyor belt then carries this material to the grizzly. The belt was designed to withstand direct loading by bulldozers. The impact of the large rocks falling directly on the belt does not damage the conveyor system. This permits the grizzly to be placed at the discharge end of the conveyor instead of at the feed point as in conventional installations.

The superiority of this belt not only helped speed up and increase production, but also eliminated the need for three or four men to laboriously remove large rocks that would damage a belt of inferior quality. The "U.S." Belt proved so efficient in tons moved per hour that another bulldozer was added to keep the loading pit stocked with raw materials. "The belt will pay for itself on this one job. We recommend it to anyone," says Bruce Lien.

• • •

When you think of rubber, think of your "U.S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.



Close-up of 60" U. S. Matchless® Belt carrying rocks from raw material pit up incline to crusher.

This installation was handled by "U.S." Distributor W. S. Nott, Minneapolis

Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

The Editor's Page

Cement, Aggregates Set New Records— Further Increase Expected in 1960

THE nonmetallic mineral (Pit and Quarry) industries in 1959 had another record year, and by a considerable margin. There was a sharp rise in portland cement shipments, and the increase in aggregates production was not far behind, both largely due to a record volume of construction. The other nonmetals, collectively, apparently about held their own. Prospects are for only a slight increase in construction volume in 1960, which should carry the cement and aggregates industries to new record levels. Other nonmetals, more affected by an expected substantial general business increase, should also collectively exceed the 1959 volume.

This information is obtained from the Review and Forecast Section of this January, 1960, issue of *Pit and Quarry*, in which we are publishing for our readers the latest and most nearly complete authentic information available on present conditions in the nonmetallic mineral industries, and on prospects for the future. This information has been compiled from answers to questionnaires sent to thousands of producers in this field, from government data, and from other sources.

According to the best information available, the dollar volume of new construction in 1959 was about $54 billion, or about 10 percent over the 1958 record. Allowing for the increased construction costs, we estimate about a 7 percent increase in actual construction volume. About $18 billion was spent for maintenance and repair, for a total of $72,000,000,000.

PORTLAND cement shipments in 1959 were up about 8 percent over 1958. Bureau of Mines figures for the first ten months of 1959, and estimates for the remainder of the year indicate that shipments were about 330 million bbl., a new all-time record. Sand and gravel output in 1959 is estimated to total about 725 million tons, about 7 percent over the record 680,000,000-ton output of 1958. These figures include both commercial and non-commercial production and industrial sand. Crushed stone production in 1959 was about 455 million tons, an increase of about 5 percent over the 436,400,000-ton record set in 1958. These figures include both commercial and non-commercial production, as well as agstone, but not the stone used in cement and lime manufacture. Lime was headed for a new record until the steel strike, and gypsum probably also set a record. The other nonmetals collectively always follow the steel production and general business curves and may have approached record volume.

AUTHORITIES agree that there will be another increase in dollar volume of new construction in 1960, estimates averaging about 2 percent. This prediction indicates a record volume of $55,300,000,000 for new construction; and again about $18 billion will be spent for maintenance and repair, for a total of about $73 billion.

These construction estimates, together with producers' reports, indicate modest increases for cement and aggregates in 1960. Cement shipments are expected to about hold their own, but they may set a new record by a small margin. Sand and gravel and crushed stone production should each be up about 2 percent or less, for new records of 735,000,000 and 457,000,000 tons, respectively. Many of the other nonmetals should show gains over 1959 figures, and a moderate increase collectively. As a result, the Pit and Quarry industries should have another record year.

Walter E. Trauffer

Now Dodge builds 'em extra-big... GAS OR DIESEL... G.V.W.'s to 53,000 lbs.!

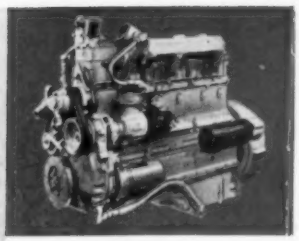
You're looking at a totally *new* kind of Dodge truck. Big, yet its short 89¾" bumper-to-back-of-cab dimension keeps it agile and easy to handle. Compact, yet its exclusive Servi-Swing fenders make it easy to service.

A truck quality-built for *toughest* construction jobs!

1960 Dodge Cab-Forwards offer new gasoline V-8 engines and four big Cummins diesels. Strong new heat-treated chrome-manganese frames, aluminized mufflers, big 14- and 15-inch clutches. And a whole line of new transmissions, with up to 20 speeds forward!

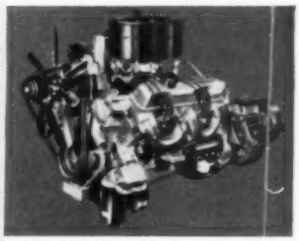
Big choice of models includes tandem and single-rear-axle types. Many wheelbases of ideal length for dump, rock and mixer bodies. Tractors, all the way up to 76,800 lbs. G.C.W.!

Check the new Dodge "big ones" now. Your Dodge dealer's is the place . . . and delivery is quick!



CUMMINS DIESELS are now available in Dodge for big fuel savings and extra stamina in construction hauling. Four engines available, with displacements from 464 to 743 cu. in.; horsepower to 220; torque to 605 lb.-ft.

SERVI-SWING FENDERS . . . Newest idea in engine servicing! Just flick a latch and these fenders open outward, making the engine easy to reach from either side. Check oil, water, battery without raising the hood!



NEW GAS V-8's, with 361- and 413-cu. in. displacements, deliver up to 228 horsepower. They're packed with premium features, such as tri-metal bearings and oil cooler, to insure peak performance and long life.

DEPEND ON **DODGE** TO SAVE YOU MONEY IN **TRUCKS**

A PRODUCT OF CHRYSLER CORPORATION

1959 1960

REVIEW and FORECAST

Of The Nonmetallic Minerals Industries

1959 Up . . . 1960 Prospects Good . . .

■ In 1959 there was again a general increase in the demand for Pit and Quarry materials (nonmetallic minerals) which apparently set a new all-time record. Portland cement and aggregates shipments were up sharply, for new records, and some of the other important nonmetals also showed gains.

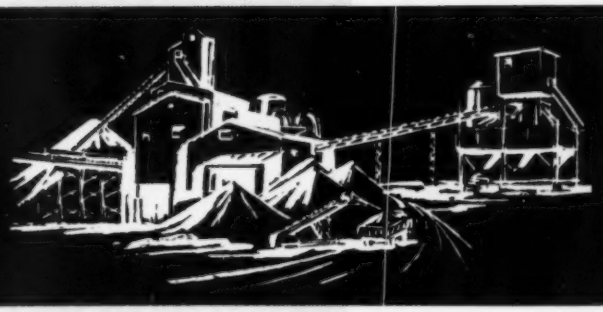
■ Prospects for 1960 indicate a continued but less pronounced upward trend. Construction volume may be up only slightly but a boom is expected in general business. As a result, the cement and aggregates industries should set new records and the other Pit and Quarry industries as a whole should also move ahead.

CONSTRUCTION: Soars 10 Percent in 1959—Modest Gain Expected in 1960 86
—JAMES G. KOSTKA

CEMENT: 1959 Production, Shipments Up—Moderate Increase Expected in 1960; Long-range Optimism Expressed 92
—WALTER E. TRAUFFER

AGGREGATES: Follow Habit of Toppling Records 106
—BUREN C. HEROD

OTHER NONMETALS: Many Gain Strength—Recoup with Over-all Economy 112
—BUREN C. HEROD



ANNUAL SPECIAL REPORT

PIT and QUARRY

The Basic Magazine
In A Basic Industry

Construction:

■ Soars 10 Percent in 1959— Modest Gain Expected in 1960

By J. G. KOSTKA

THERE is a slight difference of opinion between two of our nation's leading construction forecasters on the construction outlook for 1960. United States Department of Commerce spokesmen feel that new construction expenditures will reach a record-breaking total of $55.3 billion, an increase of about $1.3 billion, or 2 percent over 1959. On the other hand, the F. W. Dodge Corporation contends that a decline in housing in 1960 will offset gains in other major construction categories next year and produce a slight drop in total construction contracts.

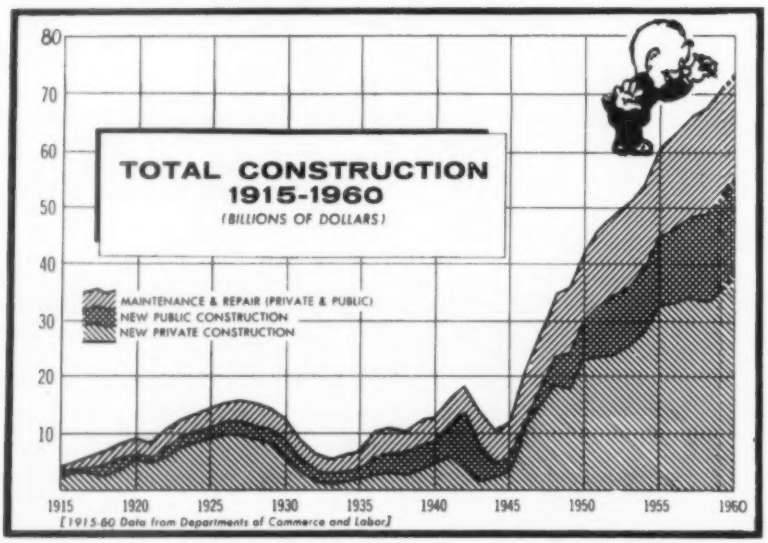
Actually, there is not a wide difference between the outlooks of these two organizations. One says we will be a little above the 1959 total of $54 billion, while the other says we will be slightly below. However, although the difference is relatively small, the U. S. Department of Commerce says that construction will continue its chain of records, while F. W. Dodge predicts that the chain will be broken in 1960.

We at PIT AND QUARRY are inclined to go along with the view held by the U. S. Department of Commerce. In contacting a good cross-section of the sand-and-gravel, crushed stone, ready mixed concrete, concrete block, and prestressed concrete producers for our Review and Forecast, we found that a large majority of them feel that their business in 1960 will be as good as or better than it was in 1959. Because of this bright outlook, plus the fact that these men are largely dependent upon construction for the sale of their products, we view the 1960 construction picture with optimism.

Construction in 1959, with the last two months estimated, showed an even better gain than the 7 percent that had been forecast prior to the beginning of the year. Right now it looks as though new construction will total $54 billion, an increase of 10 percent over the previous year. In 1960 total new construction should amount to about $55.3 billion. In addition to new construction, another $18 billion is expected to be spent for maintenance and repairs, both private and public, making construction for 1960 an estimated $73.3 billion.

Construction has a tremendous influence on our national economy. Currently, total construction represents about 15 percent of our gross national product. However, no less important to our economy is the production of sand and gravel, crushed stone, cement, and other nonmetallic minerals, because without them there would be no such thing as modern construction. In 1960 more

Total construction (new and maintenance and repair combined) should set a new construction record of about $73.3 billion in 1960.



than one billion tons of crushed stone and sand and gravel, and about 350 million barrels of cement will be used for construction.

In 1960, both private and public construction should maintain about the same relative importance, increasing 3 and 2 percent respectively. Because of the rising construction costs, the total dollar outlays will represent about the same physical volume (expenditures adjusted for price changes) of work as in 1959. With construction at this level, the demand for building materials and equipment should be sustained and the overall impact of construction on employment remain unchanged. Therefore, new construction in 1960 should act as a stabilizing force, but should not contribute greatly to overall economic expansion as in 1959.

The $37.8 billion total for private outlays in 1959, including more than $22 billion for housing, a record level, should rise in 1960 by $1 billion despite an equivalent drop in value put in place for new dwelling units. Thus, private construction, influenced in 1959 mainly by the sharp resurgence of residential building, will not be so aided in 1960. Its major source of strength will be nonresidential building.

Total public construction in 1960 is estimated at $16.5 billion, compared with $16.2 billion in 1959. The small overall gain stems from substantial increases for some categories which are offset by decreases in others. The relatively tight money market prevailing and the barrier of legal debt limits will force many states and communities to exercise somewhat more conservative policies than they followed in recent years. The pressure of unmet public works needs and the existence of federal aid programs, however, tend to sustain outlays in this area. Direct federal construction spending for military, atomic energy, conservation and development, and other facilities will probably not change much from the current high levels.

PRIVATE CONSTRUCTION

Residential Building This division is made up of the following types of construction: new dwelling units, additions and alterations, and nonhousekeeping. Farm buildings are not included in this group.

Private residential building represents the largest of the construction divisions. In 1959 it amounted to $22.15 billion, or 41 percent of total new construction. In 1960 this division is expected to drop to $21.5 billion, but it will still represent 38.9 percent of all new construction.

Private nonfarm starts in 1960 will probably number about 1.2 million units, 125,000 under 1959. Multiple dwelling units will constitute a larger proportion of this total. Dollar outlays will continue to be influenced by the trend to larger, better-quality homes, and by higher costs. Because of these factors, the decline in dollar value will not be in proportion to the drop in housing starts. Figured on a percentage basis, new private dwelling units will decline around 9.4 percent. On a dollar basis this same group will drop from $17 billion in 1959 to $16 billion in 1960. Figuring the drop this way, it amounts to a decline of only about 6 percent.

In the early part of 1960 new housing starts may begin at a lower rate than is indicated by the annual total now estimated. This will be due largely to the tight supply of mortgage funds at the close of 1959.

New Construction Put in Place in the United States (Excluding Alaska and Hawaii) 1958, 1959, and Outlook for 1960

Type of Construction	Value (in Millions) 1958[1]	1959[2]	1960[3]	Percent of Change 1958-59	1959-60
TOTAL NEW CONSTRUCTION	$48,903	$54,000	$55,300	+10	+ 2
PRIVATE CONSTRUCTION	33,491	37,800	38,800	+13	+ 3
Residential buildings (nonfarm)	18,047	22,150	21,500	+23	— 3
New dwelling units	13,552	17,000	16,000	+25	— 6
Additions and alterations	3,862	4,400	4,600	+14	+ 5
Nonhousekeeping	633	750	900	+18	+20
Nonresidential buildings (nonfarm)	8,675	8,600	10,200	— 1	+19
Industrial	2,382	1,950	2,450	—18	+26
Commercial	3,589	3,850	4,450	+ 7	+16
Office buildings and warehouses	2,013	1,925	2,225	— 4	+16
Stores, restaurants and garages	1,576	1,925	2,225	+22	+16
Other nonresidential buildings	2,704	2,800	3,300	+ 4	+18
Religious	863	925	1,050	+ 7	+14
Educational	574	530	600	— 8	+13
Hospital and institutional	600	570	700	— 5	+23
Social and recreational	424	540	700	+27	+30
Miscellaneous	243	235	250	— 3	+ 6
Farm construction	1,475	1,750	1,550	+19	—11
Public utilities	5,105	5,100	5,350	[4]	+ 5
Railroad	276	275	250	[4]	— 9
Telephone and telegraph	904	900	1,100	[4]	+22
Electric light and power	2,250	2,075	2,050	— 8	— 1
Gas	1,500	1,700	1,825	+13	+ 7
Other public utilities	175	150	125	—14	—17
All other private	189	200	200	+ 6	0
PUBLIC CONSTRUCTION	15,412	16,200	16,500	+ 5	+ 2
Residential buildings	846	1,000	900	+18	—10
Nonresidential buildings	4,653	4,500	4,725	— 3	+ 5
Industrial	408	340	375	—17	+10
Educational	2,875	2,675	2,750	— 7	+ 3
Hospital and institutional	390	425	450	+ 9	+ 6
Administrative and service	532	590	700	+11	+19
Other nonresidential buildings	448	470	450	+ 5	— 4
Military facilities	1,402	1,490	1,375	+ 6	— 3
Highways	5,500	5,800	5,700	+ 5	— 2
Sewer and water systems	1,387	1,465	1,625	+ 6	+11
Sewer	836	900	1,000	+ 8	+11
Water	551	565	625	+ 3	+11
Public service enterprises	451	560	700	+24	+25
Conservation and development	1,019	1,150	1,225	+13	+ 7
All other public	154	235	250	+53	+ 6

[1]Bureau of the Census Statistics
[2]Estimates for last 2 months prepared by BDSA
[3]Estimates prepared by BDSA
[4]Change of less than ½ of 1 percent

However, some of the factors which combined strongly in 1959 to push up interest rates and drain off investment funds may be less in evidence as 1960 goes along. For example, pressures in the money market caused by need for federal financing should ease an inventory accumulation in this industry during the last half of 1960; consequently it may be a less important factor. It should also be noted that a tendency toward conventional mortgage financing on easier terms makes possible somewhat less reliance on FHA-VA financing during a period when interest rates are as high as they are now.

Both the additions and alterations and housekeeping segments of the private residential building division are expected to show increases in 1960. The additions and alterations group will rise from $4.4 billion in 1959 to $4.6 billion in 1960, an increase of 5 percent. The housekeeping group should climb from $750 million in 1959 to $900 million in 1960, a substantial increase of 20 percent.

Non-residential Buildings This division is made up of industrial, commercial, and other non-residential buildings. Each of the three subdivisions is expected to register a substantial gain in 1960. Their combined total new construction amounted to $8.6 billion in 1959 and should reach $10.2 billion in 1960, a jump of 19 percent.

The industrial segment of this division should show a spectacular rise of 26 percent in 1960, when its dollar volume reaches $2.45 billion. Industrial construction, after reaching a peak of almost $3.6 billion in 1957, reacted to the economic downturn in 1958 by a sharp drop of almost one-third and should reach a low point in 1959 at slightly below $2 billion.

Present industrial building programs are probably less strongly influenced by the need for greater capacity than by the need for meeting competition with more efficient production facilities designed to achieve lower unit costs. Because of this fact, construction of this type becomes an integral part of a plant's operation and not just so much available room.

The growing requirements for research and development are also factors in stimulating this type of construction.

Commercial construction in 1960 will probably record even greater gains than in 1959. Office buildings and warehouses, which declined in 1959, should bounce back in 1960 because many large office building projects started in 1959 will contribute heavily to activity during 1960.

An identical situation is foreseen for stores, restaurants, and garages, another group belonging to commercial construction. Coincidentally, the construction value for office buildings and warehouses, and for stores, restaurants, and garages was $1.925 billion in 1959, and is expected to hit $2.225 billion for each of these two groups in 1960.

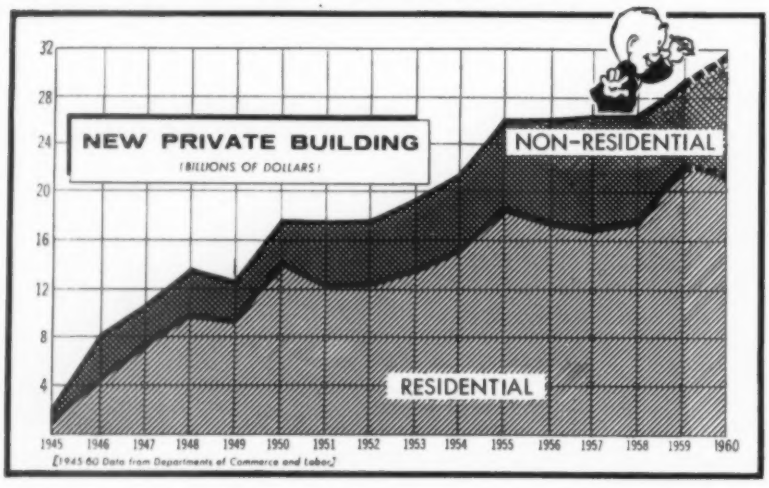
The other nonresidential buildings subdivision, made up of (1) religious, (2) educational, (3) hospital and institutional, (4) social and recreational, and (5) miscellaneous construction, is counted on for a $3.3 billion total in 1960. This is $500 million above the total value recorded by this type of construction the year before. Construction of religious buildings should exceed the billion-dollar mark in 1960. After being interrupted in 1959 by the economic slowdown of 1958, private school building will continue its regular upward trend of recent years. Federal aid will be an important factor in the stimulation of private hospital construction. Social and recreational building activity in 1960 is expected to rise substantially under the influence of higher incomes.

Farm Construction Because farm construction expenditures tend to follow closely any changes in farm income, farm construction is certain to decline substantially in 1960. Bringing about this decline is the 1959 drop in agricultural income. In 1959 farm construction amounted to $1.75 billion. Indications are that it will fall to $1.55 billion in 1960, a drop of 11 percent.

Public Utilities Public utilities construction, stable in 1958 and 1959, is counted upon to register a small increase in 1960, with a total estimated value of $5.35 billion. This is $250 million above the 1959 total, an increase of 5 percent. Uneven movements, however, characterize the various utility categories. The electric light and power industry has just completed a major program of expansion that has increased its power-producing capacity to a point considered generally adequate for today's high-level economy.

Gas facilities construction was set off course in 1958 from its long-range growth pattern by legal uncertainties. The problems were resolved by a recent court decision, and construction resumed its up-

Aided considerably by non-residential non-farm construction, new private building is expected to reach $31.7 billion in 1960, a 3 percent rise over 1959.



ward swing in 1959. It should reach a new peak in 1960. New pipelines for the transmission of natural gas will contribute heavily to the accelerated activity.

Telephone construction expenditures should rise to the volume recorded several years ago before expansion programs were curtailed.

All Other Private Construction This is a catch-all for private construction not coming within any of the other groups. It is relatively small, amounting to only $200 million in 1959. About the same amount of construction is anticipated for this group in 1960.

PUBLIC CONSTRUCTION

Residential Buildings Expenditures for public housing are expected to drop 10 percent, to $900 million, in 1960. There was a sharp spurt in this type of housing last year, when it went up to one billion dollars, compared to $846 million for the previous year. This upswing was due mainly to armed services housing starts that began late in 1958 and were completed in 1959. No abnormal need for construction of this type is anticipated for 1960.

Non-residential Building Making up this division are the following segments: industrial; educational; hospital and institutional; administrative and service; and other non-residential buildings. This combined group represented $4.5 billion in construction in 1959. In 1960 it should rise to about $4.7 billion, a modest increase of 5 percent.

The construction of industrial buildings, after a 17 percent drop in 1959, should register a good comeback in 1960, bringing its total up to $375 million. This represents a 10 percent increase over the previous year.

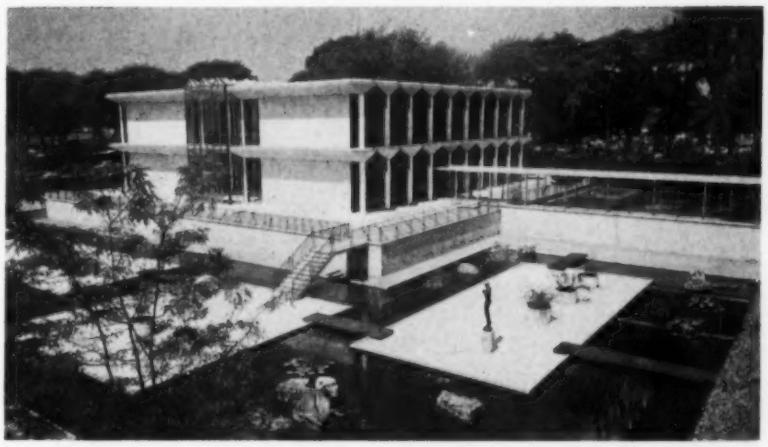
Currently there is a shortage of 135,000 classrooms in our schools throughout the United States. At an average cost of $40,000 per classroom, it would require $5.4 billion to supply the additional rooms and satisfy our present needs. In spite of this fact, only $2.75 billion will be spent on educational construction in 1960. This is $75 million more than was spent in 1959, but still a long way from the amount needed to bring this type of construction near today's requirements. There are a number of reasons why the need will not be met.

Many southern communities, confronted with the desegregation issue, have adopted a wait-and-see attitude. There is a growing reluctance on the part of the public to pay higher taxes; so only limited appropriations for school construction are voted.

A good number of officials at the federal, state, and local levels feel that there will be a federal-aid school construction program in the fairly near future, similar to federal aid for highways. Reasoning that federal funds will come to their aid, they feel it is to their advantage to coast along and see what happens.

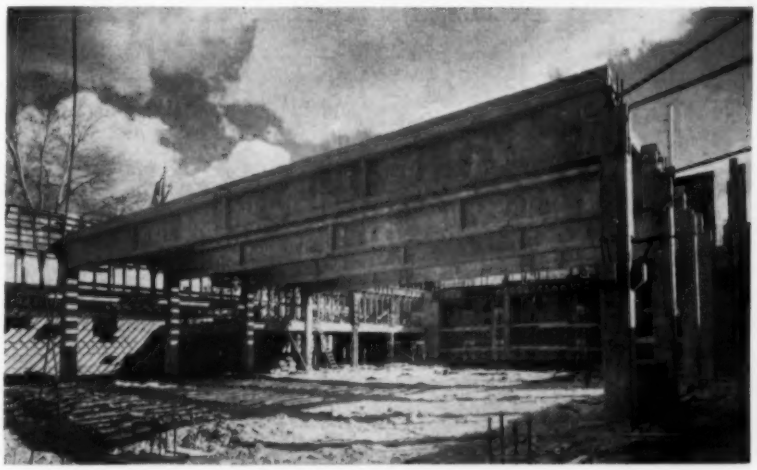
Hospitals and institutional construction is expected to continue its upward trend in 1960. In 1959 this segment of public non-residential construction amounted to $425 million. A 6 percent increase is forecast for 1960, which would bring the figure up to $450 million.

Construction of administrative and service buildings, such as court houses, government office buildings, penal institutions, and firehouses,



Wayne University's McGregor Memorial Conference Center near Detroit, Mich., an example of beautiful design achieved by thin-shell concrete construction.

Below: Non-housekeeping residential construction has been growing steadily. Structures of this type worth about $900 million are forecast for 1960. This picture shows the new Hotel Utah Motor Lodge under construction in Salt Lake City.



amounted to $590 million in 1959. Indications are that this group will experience a healthy rise of 19 percent in 1960, with a total of $700 million.

Other nonresidential buildings not mentioned above are in for a slight drop of 4 percent, probably going from $470 million in 1959 to $450 in 1960.

Military Facilities Just what military construction will be in 1960 depends to a great extent upon Congress, especially during an election year. Right now it looks as though military construction will decrease by around 8 percent, with a total of $1.375 billion. Military facility construction amounted to $1.49 billion in 1959.

This type of construction will also be strongly influenced by missile programs, which make up at least $500 million of this group's total.

Sewer and Water Systems Because the favorable housing record in 1959 sewer and waterworks construction should hit new highs in 1960, with a total valuation of $1.625 billion. This would be 11 percent above the 1959 total, which was $1.465 billion.

Waterworks, which has been badly lagging behind needs, will have much to do with this increase. California's Feather River project alone should top $2 billion, if the voters approve a $1.7 billion bond issue.

Public Service Enterprises Last year public service construction enterprises showed a 24 percent increase, with a dollar valuation of $560 million. The year of 1960 should follow pretty much the same pattern, with another increase of around 25 percent. This increase would bring the year's value for this type of construction up to $700 million.

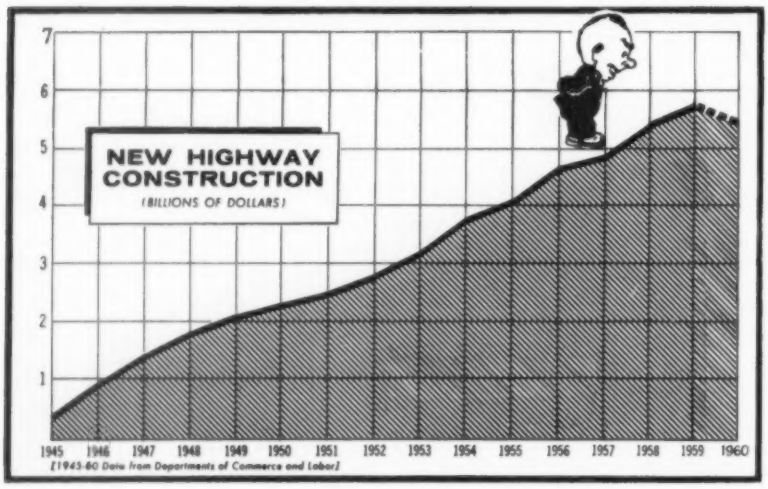
These gains arise from major state undertakings, such as the Wavatum hydro-electric dam in Washington and similar projects in California.

Conservation and Development Conservation and development outlays are slated to exceed the 1959 high of $1.15 billion and reach $1.23 billion in 1960. Most of the increases will result from new projects of the Corps of Engineers. In 1960 considerable work will be done on the Summerville Reservoir in West Virginia, a part of the Ohio Basin project which will probably require a number of years. Peak activity is also continuing on such projects as the Oahe Reservoir on the Missouri River and the Ice Harbor Lock and Dam in Washington (state). Work on the connecting channels in the Great Lakes is also a major source of activity.

With the upsurge of this type of construction stimulated by the St. Lawrence Seaway, it seems logical to assume that conservation and development projects will continue at a high level for several years.

All Other Public Construction Contained in this group is all public construction not listed in any of the other divisions. It represents only a small segment of public construction, but it has been growing rapidly. In 1959 it amounted to $235 million. This was an increase of 53 percent over 1958. The 1960 total should be about $250 million, an increase of 6 percent over 1959.

Dam 8 on the Monongahela River at Point Mario, Pa., after conversion from a fixed crest structure to a movable dam. This project represented $2.5 million in conservation and development construction.



A drop of 2 percent is forecast for highway construction in 1960. If the forecast is correct, this will be the first decline for this type of construction since 1945.

HIGHWAY CONSTRUCTION

Highway construction, the largest division of public construction, accounts for over one-third of its total. In 1960 highway construction is expected to decrease for the first time in the post-war period. The decline will be only a small one, however, since the $5.7 billion forecast for 1960 is only slightly below the all-time high of $5.8 billion indicated for 1959. The factors which are influencing prospects are the limitations imposed by the pay-as-you-go aspect of current federal aid highway legislation, as well as the necessity for an increasing tempo of expenditures made by the various states for right-of-way purposes.

As a result of the 1959 Highway Act, Commerce Secretary Mueller chopped state highway allotments by $700 million for the fiscal year of 1960 (July 1, 1959, to June 30, 1960). He said this was necessary in order to continue the program without further interruption, and to keep it on a pay-as-you-go basis.

The new appropriations allow the Highway Trust Fund to reimburse the states for $1.8 billion for their interstate work. Another $900 million is allotted for ABC programs. This brings the total federal outlay to $2.7 billion for fiscal 1960.

States get their slices of the total federal money available on the same basis as they now receive their annual apportionment—the ratio of unbuilt roads in each state to the nationwide total. Money due a state during any quarter, if not spent, can be carried over to another period.

The Federal Aid Highway Act of 1959, approved by the President, calls for a one-cent increase in the federal gasoline tax over the next 21 months. This one-cent increase in the federal tax on gasoline and other motor fuels became effective on October 1, 1959, and will run until July 1, 1961.

In addition to providing a means of raising funds for federal highway construction, the Federal Aid Highway Act also contains the following provisions: (1) that federal standards controlling billboards shall not apply to segments of the Interstate System in municipalities where the use of real property is subject to municipal regulation or control, or in industrial or commercial areas; (2) that an additional $2 million be appropriated out of general funds for parkways, for the fiscal year of 1960; (3) that provisions be made for a study by the Secretary of Commerce on the need for the extension of the Interstate System within Alaska and Hawaii; (4) that authorization be granted for spending 100 percent of the federal monies on forest, park, and Indian reservation roads damaged by earthquakes, severe storms, or other catastrophes; (5) that the authorization for bridges on federal dams be increased from $10 million to $13 million.

Among the states with the brightest outlook for highway construction in 1960 are California, Florida, Michigan, Missouri, Ohio, Pennsylvania, and Virginia. All these have obligated relatively small portions of their fiscal 1960 totals thus far, leaving them with 72 to 90 percent of their funds available for contracts to be awarded by June 30. Indications are that all of these states, except Pennsylvania and Virginia, plan to utilize all available funds by June 30, 1960.

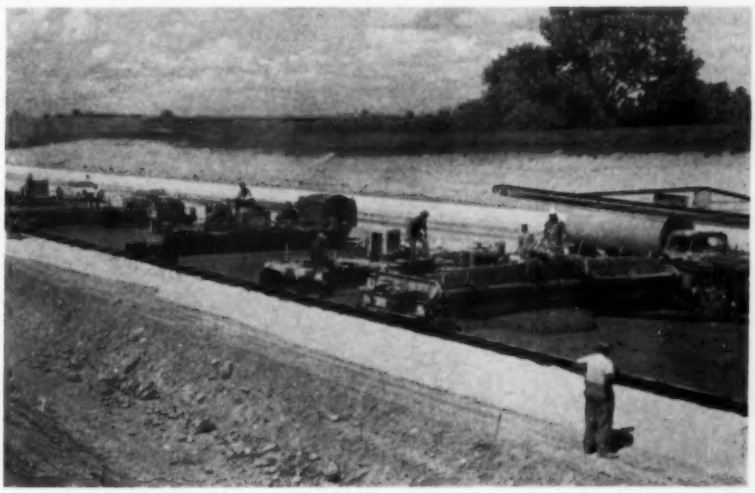
Inability of states to match federal funds is generally the reason that states do not use all available federal aid. Michigan and a few other states are considering borrowing necessary funds to pay the whole bill for some projects that available federal aid won't cover, relying upon the Highway Trust Fund to reimburse them at a later date.

In spite of the slight slow-up in highway construction at present, more than 71,000 miles of new highways, including 4,100 of superhighways, have been built in the last 3 years. And another 27,000 miles are under way. We are building new roads more than twice as fast as we ever did at any time before 1956. America is truly becoming a nation on wheels.

State Allotment of Federal Highway Construction Funds For Fiscal Year Ending June 30, 1960 (Thousands of Dollars)

Ala.	$ 52,221	Ind.	$ 71,952	Nebr.	$ 29,225	S. C.	$ 25,776
Alaska	35,961	Iowa	35,182	Nev.	16,935	S. D.	23,201
Ariz.	34,724	Kans.	33,213	N. H.	13,695	Tenn.	70,297
Ark.	30,047	Ky.	46,396	N. J.	74,032	Tex.	130,997
Calif.	226,965	La.	60,142	N. M.	32,603	Utah	24,886
Colo.	27,519	Maine	15,369	N. Y.	143,435	Vt.	20,303
Conn.	29,795	Md.	49,306	N. C.	40,052	Va.	91,387
Del.	10,573	Mass.	65,476	N. D.	17,222	Wash.	45,948
Fla.	60,076	Mich.	99,081	Ohio	149,715	W. Va.	31,534
Ga.	62,527	Minn.	54,092	Okla.	32,582	Wis.	38,315
Hawaii	4,095	Miss.	33,043	Oreg.	43,179	Wyo.	26,638
Idaho	20,311	Mo.	73,949	Pa.	114,449	D. C.	22,736
Ill.	129,249	Mont.	33,192	R. I.	13,153	Puerto Rico	6,249

A section of the new and modern Northwest Toll Road, near Rockford, Ill., in the process of construction.



Cement:

■1959 Production, Shipments Up—Moderate Increase Expected in 1960; Long-range Optimism Expressed

By WALTER E. TRAUFFER

THE PORTLAND cement industry in 1959 set new all-time records in production and shipments, considerably exceeding the 1958 totals and the 1956 record. Shipments in every month through September exceeded those in the preceding year, in several cases by 4 to 6 million bbl. In October, however, shipments fell off more than 4 million bbl., and estimates for November and December indicate that these months just about equalled those of a year ago.

Official government figures are now available only for the first 10 months of 1959, but we have made estimates believed to be conservative for the last two months. These estimates are based largely on the replies from producers answering our questionnaire. As a result, we believe the following totals to be fairly accurate.

It is estimated that portland cement production in the United States and Puerto Rico in 1959 was about 336 million bbl. and shipments about 330 million bbl. The value of shipments, about $1.1 billion, also set a new all-time record, due in part to a slight increase in prices. These figures indicate an increase of nearly 9 percent in production, 8 percent in shipments, and 10 percent in value of shipments over the 1958 totals of 311,471,000 bbl., 307,068,000 bbl., and $997,701,000 respectively.

Production of portland cement

Phoenix Cement Company's new 1,800,000-bbl. dry-process plant at Clarksdale, Ariz. The crushing and blending-storage area is at the left in the plant area; quarries now being opened are at the upper right.

through October (10 months) of 1959 totaled 288,207,000 bbl., or 28,509,000 bbl. and 11 percent above the corresponding 1958 period. Shipments through October totaled 292,589,000 bbl., 10 percent over the 1958 period.

Stocks on hand at the end of October, 1959, were 23,912,000 bbl., or 3,500,000 bbl. and 17 percent above the 20,412,000-bbl. low of a year ago. The lowest point in stocks is usually at the end of October; and if this is again the case, this is the highest low in many years.

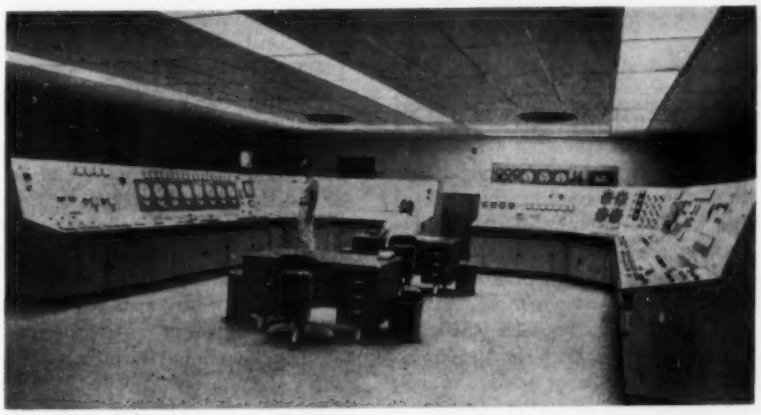
The accelerated increase in the demand for cement for most of the year was one of the most important developments of the year—this in spite of the sharp drop in shipments in October and the very slight recovery in November and December. This drop was due largely to the steel strike and the resulting delay in construction. Unfavorable fall weather in some parts of the country was also a contributing factor. There were some strikes in the industry, but no shortages of equipment or supplies.

The expenditures of the industry for expansion and improvements were considerably lower in 1959 than in recent years. Five new plants were built, and about 20 major expansion programs were completed at a total cost of about $130 million. These projects involved about 18 million bbl. of productive capacity of which perhaps 14 million bbl. was new capacity.

Present indications are that 8 new plants and at least 12 major expansion programs may be completed in 1960. These projects involve an estimated total of 20 new kilns and 43 grinding mills and would have a total capacity of about 23 million bbl. Of this, at least 21 million bbl. would be added capacity. Estimated expenditures for these programs are in excess of $180 million. Most other companies will continue normal expenditures for needed replacements and facilities to maintain efficiency and reduce costs.

It is becoming increasingly obvious that the portland cement industry heads have no intention of permitting a recurrence of the cement shortages of 1950 to 1956 for which it was seriously criticized.

It is estimated that the productive capacity of the industry reached a new high of about 418 million bbl. at the end of 1959, an increase of more than 15 million bbl., or nearly 4 percent over the capacity of a year ago. By the end of 1960 capacity should increase about 18 million bbl. to a new high of 436,000,000 bbl. As a result of this expansion, the industry in 1959, in spite of the sharp increase in demand, used only about 79.5 percent of year-end capacity, compared to 77.3 percent in 1958, 78.2 percent in 1957, and 90.7 percent in 1956. Our estimated



The central control room at the Ideal Cement Company's new 1,250,000-bbl. dry-process plant at Tijeras, N. M., controls every production phase, from quarry to finished storage.

Part of the 5½-mile conveyor system connecting quarry and both plants of the Ideal Cement Co. at Ada, Okla. One kiln of the new 3,000,000-bbl. wet-process plant was started up late in 1958, the other early in 1959.

figures indicate that perhaps 78 percent of year-end capacity will be used in 1960.

Prospects for 1960 are definitely favorable, but only a modest increase seems likely, based more on the general boom expected after the steel strike situation is settled than on any important increase in construction volume. Producers' estimates vary considerably, with geographical location a factor, but the general feeling seems to be that the demand for cement will be up 2 to 5 percent in 1960. Long-range expectations are much more optimistic.

CONDITIONS

Producers answering our questionnaires, representing the bulk of the productive capacity of the industry, seem to be almost unanimously in agreement that 1959 was a satisfactory year in most respects and that, but for the steel strike, the temporary slowdown in the Interstate Highway Program, due to lack of funds, and the early advent of winter weather in some areas, it would have been a highly successful one. High money rates and their effect on construction also constituted a factor.

All producers reported substantial increases in shipments for the first nine months of the year, and some experienced little lessening of demand in October. November and December were expected to have shipments about equal to last year's figures for those months. Estimates on total shipments for 1959 varied from 320,000,000 to 340,000,000 bbl., as compared to the 307,041,000 bbl. actually shipped in 1958. Our estimate, based on later information, is that 1959 shipments were between 330,000,000 and 335,000,000 bbl. There were no cement shortages reported during the year. There were some strikes but no labor, materials, or car shortages.

An Eastern producer says: "The effect of the steel strike on construction in our area made itself felt emphatically during October, the last good construction month, weatherwise, in the Northeast."

A smaller Eastern producer says: "This has been a year of the so-called 'hard sell.' While we have had a good year this year and expect to do well next year, our sales efforts have been in the direction of trying to get every barrel we could...

"The steel strike has had far less effect on our sales than we thought it would. However, in November, we began to see some curtailment of jobs because of the lack of steel. So far, the adverse effect has been only moderate."

Another large company says: "Cement has generally been in ample supply in 1959. It is pertinent that, on a national basis, cement producing capacity currently exceeds the prevailing demand. It is likely that this condition will exist in 1960 and perhaps for several years after that, but the outlook... is one of optimism."

According to a Midwestern firm: "There is no indication of cement being in short supply in 1960. Additional plants and facilities added during 1959 provide an excess of capacity in most sections. . . .

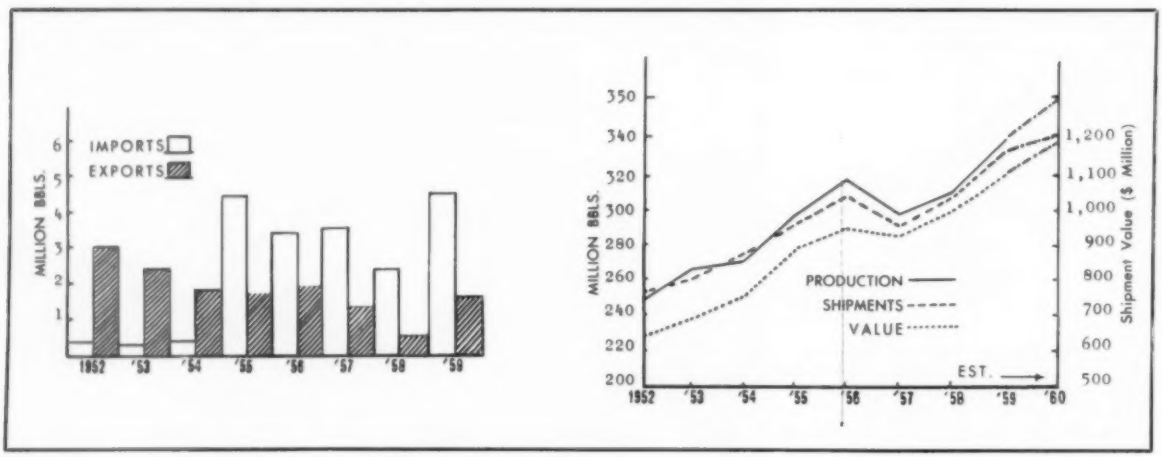
"The steel strike had little effect on jobs under construction in 1959. However, it undoubtedly delayed some starts in 1959 which may be reflected in construction to be released when agreement has been reached in the steel industry."

A large Western and Midwestern firm says: "Generally speaking, conditions in the industry have been good, probably better in 1959 than in any previous year, although not as good as were predicted late in 1958. Shipments will probably not come up to the 335,000,000 to 340,000,000 bbl., as earlier projected by some of the experts, the principal reasons being the long-lasting steel strike, and the failure of Congress to fund the Interstate Highway Program prior to the close of the fiscal year on June 30, 1959."

A Northwestern firm says: "Continued plant expansion at this time seems to be adding to over-production in many areas of the country." This producer states that it will take a number of years for consumption to catch up to present and contemplated production.

PROSPECTS

Cement companies, on the average, are moderately optimistic about



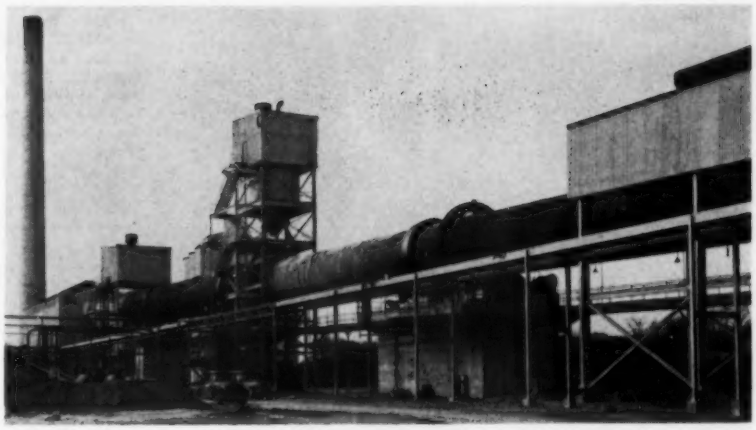
business conditions in 1960 and much more so on long-range prospects. All but a few expect their 1960 shipments to exceed 1959 by 1 or 2 or even 5 to 10 percent. The pessimists feel that the effect of the steel strike will carry over as will that of the bad weather which has slowed down construction starts in some areas. The slowdown in home and highway construction is also cited. At least one producer feels that the steel strike will help business in 1960, due to a carryover of construction. No shortages in labor, materials, or cars for loading are expected.

Prospects in the Northeastern states are only fair, according to a producer who says: "Generally speaking it is our opinion that cement business in the area of our . . . plants will not register increased activity during 1960, as compared with 1959. In fact, we anticipate the possibility of a slight decrease in demand, possibly as much as 5 percent on an overall basis. . . "

Another company selling nationally says: "An increase in cement usages of 3 to 4 percent in 1960 is possible. A more optimistic outlook does not seem to be indicated. The supply of steel will undoubtedly be unbalanced and inadequate during the early part of the year even if the strike is not resumed. While the 1 cent per gallon increase in the federal gasoline tax will allow the Interstate Highway Program to proceed at a fairly good rate, the expected revenue is still inadequate to keep the program on its original schedule. High interest rates and scarcity of mortgage money will probably retard residential construction. An expected substantial increase in industrial building will be a plus factor.

"The long-range outlook for the cement industry is excellent. . . In the not too distant future the demand for cement will be in practical balance with the supply."

A large Midwestern producer writes: "While the steel strike seriously affected demand in the final quarter of 1959, it will probably help increase demand in 1960 if there are no further work stoppages. There is every likelihood that the economy as a whole will be very strong next year, and our industry should receive some of the benefits of this improvement which will tend to offset the slackening in pace of the Interstate Highway Program and the sharp anticipated decline in new housing starts."



The 13- by 460-ft. kiln at the 1,500,000-bbl. wet-process plant of the Columbia Cement Corp. at Barberton, Ohio. This is a recently-formed, wholly-owned subsidiary of the Columbia-Southern Chemical Corp.

A Southern firm says: "So far, the steel strike has not appeared to affect our shipments or our economics." This producer adds that if the steel strike is settled with no gain in control for the companies, and then followed by similar developments for the railroads, it will spell trouble for all employers and, pretty definitely, higher prices and accelerated inflation.

Another declares: "It is our opinion that the cement industry in 1960 can look forward to another good year, with total shipments about the same as for 1959."

According to a large Midwestern producer: "The demand for cement should be slightly less, perhaps 3.3 percent less, in 1960 than it was in 1959. This will be the result of a small decline in home building and in highway construction, together with some adverse effects on construction carried over from the steel strike. These negative influences are not expected to be compensated for fully by gains in other segments of construction. However, on balance, we expect 1960 to be another good year."

A large Western firm says: "Over the long pull the usage of cement will gradually increase. New markets for cement, particularly in precast and prestressed concrete, are increasing rapidly and have not yet fully come into their own. There will be continuing fluctuations in the economy, of course; but it seems certain that our increasing population will require more houses, schools, hospitals, utilities, highways, shopping centers, and other facilities which will create an increasing market for cement. . . . Our feeling is that because of the uncertainty in the steel industry and the bad weather which has prevailed in all parts of the country except on the Pacific Coast in the last three or four months the usage of cement in 1960 may not be any greater than in 1959."

IMPORTANT DEVELOPMENTS

Undoubtedly, the most important development of the year in the cement industry was the stepping up of the volume of new plant construction and plant improvement and expansion. After several years of gradual decline from the peak expansion year of 1956 it now becomes apparent that the work under way for completion in 1960 may approach or even exceed the former record year.

There seems to be a basic difference, however, in the reason for this expansion. Earlier expenditures were made primarily for competitive reasons—to increase a company's productive capacity or to expand its marketing area. Lower cost of production, labor savings, and

The 350-ft. stack at the Dundee Cement Company's plant at Dundee, Mich. An electrostatic precipitator system, installed at a cost of $1,000,000, removes more than 99 percent of impurities collected at 27 points. The two kilns extending from the precipitator building are the longest (460 ft.) and largest in diameter (16 ft., 6 in.) in the Western Hemisphere. One is now producing test clinker. Capacity will be 5,000,000 bbl. annually.

similar economic considerations also entered in, as did the better uniformity and quality of the cement produced.

The mass experience of a large number of producers with more modern and better controlled plants has now apparently proved that the lower cost of production and the higher quality of cement resulting is a bargain even at today's high investment costs, and in spite of a considerable excess of capacity over demand. Such an excess is now widely held to be beneficial to the industry in that it encourages the development of user industries and of wider application and new uses, and that it eliminates any danger of future shortages due to unforeseen demands or conditions.

This trend is coupled with others toward greater automation and better control of quality, and toward larger and more efficient kilns, grinding mills, etc. The production of a uniform high-quality product at the lowest possible cost and price is now one of the major aims of the industry in its effort to retain and improve its competitive position.

One major producer feels that "among the most significant trends during 1959 was that toward larger investments in existing plants with the twin objectives of minimizing the effect of increasing costs and control of product characteristics. This development should tend to reduce the necessity of price advances."

A single-plant company wrote: "The tendency toward large production units and centralized controls continues and will continue. This is progress, as are the higher wages. It means that we get and must get more barrels per man-hour to support the higher wages. But I do not expect present employees to lose jobs through this tendency. The rapidity of the change is tempered by its high investment cost. The interest and depreciation charges go a long way toward offsetting the saving in man-hours. So the reduction in the cement labor force will be slow enough to be made largely by natural retirement."

Another small company stated: "As to manufacturing methods, the one great need is for continued improvement in quality control, which can be brought about only by automation. The fact that automation does result in some cases in reduced labor costs is purely incidental. Quality control is becoming increasingly important."

Another trend stressed by several producers was the continued growth of the industries using cement, and the continued effort to give them the best possible service. As one producer stated: "The role of the ready mixed concrete industry in the field of construction continues to increase in importance. From its modest beginnings in the 1920's, this industry has grown to be the largest consumer of cement in the United States. Also gaining in importance are the manufacturers of concrete products and the large diversified contractors. This trend is expected to continue."

Another important development was the rapid spread of truck delivery of cement into new areas and installation of facilities to handle this business, especially in bulk.

An Eastern producer says: "In our sales area, the most important developments and trends have been the increasing amount of foreign cement coming into the country, the start of barging on the Hudson River, and the gradual spread of trucking toward the East."

EXPANSION VS. ECONOMY

Apparently in the last year the thinking among producers has swung more strongly toward the conviction that new and modern plants and equipment are paying off in real savings in production costs and improved product. This conviction, it is believed, is chiefly responsible for the fact that expenditures for new plants and expansions and improvements of older plants is stepping up sharply after several years of decline from the record expenditures of 1956.

Management of a large company operating east of the Mississippi River wrote as follows: "Our own company thoroughly realizes the substantial future growth of our industry, as evidenced by our new plant. . . . The plant dramatically proved the economy of a modern, well-designed unit. There were months this year when we operated it at less than one-half the man-hours per 1,000 barrels which all . . . . units averaged during those same months. This clearly pointed out the necessity for expending large sums of money to bring our existing plants to an even higher state of efficiency."

A small Eastern producer says, "Increased efficiency and economy of production justify the expenditures which are so common in our industry at this time."

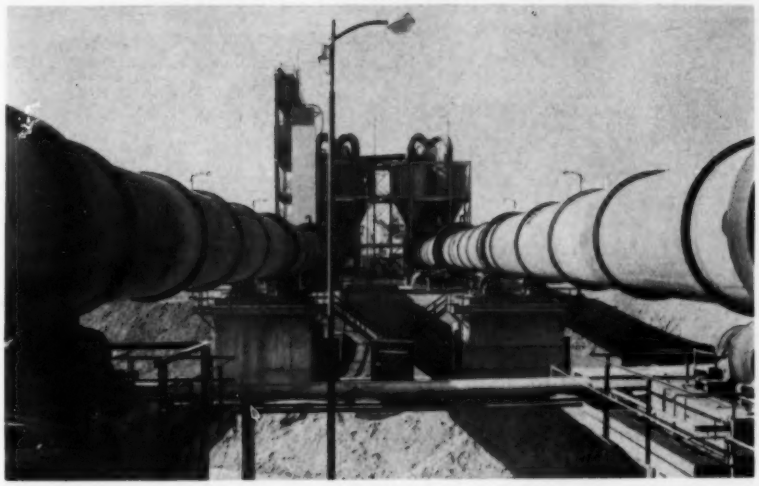
According to another: "With the marketing conditions as they are in our sales area, it would appear as though the pace of building new plants or expanding present plants will tend to taper off. Further, the high cost of modernization to attain increased efficiency and economy of production undoubtedly will be looked at more carefully by the management."

Another head of a large company says: "In spite of this outlook and the fact that we ourselves were operating at only 80 percent of capacity these last two years, we are continuing our capital expenditure program with the objectives of continuing to modernize our existing plants; we wish to improve further our uniformity in quality of products and expand capacity moderately in anticipation of considerably greater cement usage in the middle 1960's.

"To my mind, it was very important for our industry to have a certain amount of excess capacity at all times, so that we can constantly be in a position . . . aggressively to promote the use of concrete in many expanding areas."

A Midwestern company executive says: "We feel that the resulting increased efficiency and economy resulting from new plants, plant expansions, and plant renovations do justify the capital expenditures required. It appears that increasing costs make it mandatory for cement producers to become even more diligent in working on improved efficiency in plant operations, particularly in the use of manpower."

Management of a large Western company says: "With regard to the future, if labor, fuel, and power costs continue to increase, the only solution is for the industry to continue to modernize existing plants to increase productivity and, in the construction of new plants, to introduce every element of cost saving in spite of the tremendous amount of capital required."



Two new 1,200,000-bbl. kilns are included in a modernization program at the Riverside Cement Oro Grande, Calif. plant. A $5,800,000 electronically-controlled storage, blending, and reclaiming system was also installed.

PROFITS, PRICES, COSTS

The partial information now available makes it certain that the portland cement industry in 1959 had a highly profitable year. The volume of shipments about 330,000,000 bbl., was up about 8 percent and this volume, with a slight increase in prices, probably set an all-time record of about $1.1 billion in value of shipments. This figure compares to the record of $997,701,000 in 1958 and the earlier record of $940,020,000 in 1956. The average price in 1959 was apparently about $3.30 per bbl., compared to $3.25 in 1958 and $3.18 in 1957.

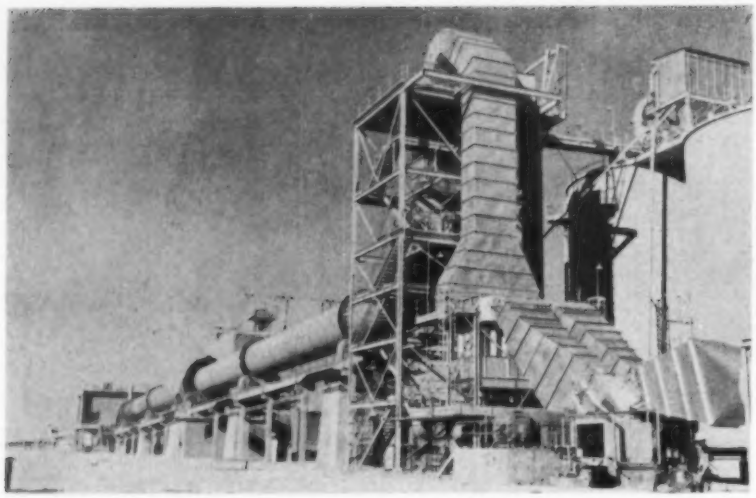
Costs again went up considerably in 1959 as prices of nearly everything, including labor, went up during the year. Again, probably only a part of this increase was offset by operating economies and the higher efficiency of the new plants and equipment added in the last few years.

Profits in 1959 were apparently up considerably from 1958 in spite of a sharp drop in sales in the final quarter, due largely to the steel strike. This assumption is verified by financial reports of various companies for the first 9 months of the year. There was considerable variation from company to company, but all of the 12 major companies showed substantial increases in profits, averaging 27 percent. What these profits were for the full year, after the sharp drop in sales in the last three months, is anybody's guess, but it seems certain they must have remained well ahead of 1958.

Prospects for 1960 do not justify any great optimism concerning further increase in profits. Under existing conditions, producers are hesitant about increasing prices substantially, and costs are sure to continue upward in spite of the fact that 1960 is not a big contract year with labor. The considerable excess of capacity over demand, with the resulting competition for business, is not conducive to widespread price increases, and the increasing threat of foreign cement dumping at low prices is becoming an important depressing factor. A few large companies have announced price increases of 10 to 15 cents per bbl. for 1960, but these were mainly in areas where there had been no increases in two years.

A few other producers have definitely announced that they will hold the price line but these are mostly in areas where there was a price increase last year. One major producer has announced that there will be no price increase, and that prices will be lowered where necessary in order to counteract foreign competition. Most producers, especially the smaller ones, are delaying their decisions until they know what the big companies are going to do.

The first indication of 1960 prices came in mid-November, when two major firms announced increases. Shortly afterward a large Western company announced that it would hold the price line. Spokesmen of



A part of the new 1,250,000-bbl. wet-process plant of the Southwestern Portland Cement Co. at Odessa, Tex. The 11½- by 400-ft. kiln is shown.

another large national firm said, with respect to increasing labor rates and foreign competition: "This problem is of grave concern and becomes accentuated with each increase in domestic labor rates. Generally speaking, we have no recourse except to translate this cost into higher prices. Unfortunately, our company must revise our prices upward if we are to maintain a sound economic position. In spite of our best efforts, increased productivity has not kept pace with increased wages. The vicious cycle of higher wages and higher prices continues its ever-upward spiral. The problem is far from solution and continues as a Number One headache."

Another says: "The past year was marked by wage settlements by our industry which in my opinion were distinctly inflationary and unwarranted by all the circumstances. The only merit the settlement has is that the new contracts extend for a period of two years until the early summer of 1961, whereas former labor contracts had been on an annual basis. . . .

"Costs, other than labor, also continued to rise on the average of about 4 to 5 percent. Costs of constructing new facilities and replacing old facilities and machinery increased somewhat more than 5 percent."

A major Midwestern producer says: "In early November we announced our prices for 1960. The effect was, on the average, to bring about only a minor increase over 1959 prices. Increases in cost of paper packages and higher wage rates which could not be offset by greater operating efficiency were responsible for the upward adjustment."

According to a large Western company spokesman: "Labor costs went up sharply on May 1, and costs of maintenance, repairs, and operating supplies gradually increased throughout the year. Fuel also has increased somewhat in price during the year. There have been no increases in the price of cement of any consequence since January 1, 1958, and with the industry having to absorb these rising costs, with production at somewhat lower levels than formerly, net returns are apt to be somewhat less this year for many companies than they have been in the last year or so."

1959 CAPACITY INCREASE

The increase in productive capacity of the portland cement industry in 1959 was substantial but continued the steady downward trend that has existed since the record expansion year of 1956. It is estimated that about 18 million bbl. of capacity was installed in 1959 in the form of five completely new plants and at least 16 major plant expansions, two of which are actually new plants alongside older ones. At least 14 new kilns and 33 new grinding mills were in talled. The cost of all these additions alone was well over $130 million, and other improvements of less individual importance would substantially increase this figure.

Some of this capacity, of course, replaced existing facilities, but most of it—we estimate about 14 million bbl.—was new capacity. This compares to the record 34,143,000 bbl. added in 1956, the 30,944,000 bbl. added in 1957, and the 22,000,000 bbl. added in 1958, according to Bureau of Mines figures. As the official capacity of the industry at the end of 1958 was 402,786,000 bbl., the capacity at the end of 1959 should be about 418 million bbl.

New Plants The five new cement plants completed in 1959 are those of the Columbia Cement Co., Barberton, Ohio; Ideal Cement Co., Tijeras, N.M.; Mississippi Valley Portland Cement Co., Redwood, Miss.; Phoenix Cement Co. (American Cement Corp.), Clarkdale, Ariz.; and Southwestern Portland Cement Co., Odessa, Texas. These five plants have a combined capacity of about 6.6 million bbl. annually; and, as they are all completely new plants at new locations, this is all new capacity. The announced cost of building these plants totals $54,000,000. Included in these plants were 6 new kilns and 11 new grinding mills. No plants are known to have been abandoned during the year.

Plant Expansions At least 16 portland cement plants are known to have completed major expansion and/or improvement programs in 1959. Two of these plants are regarded by their owners as essentially new plants alongside older ones and dependent on them only to a minor extent. Included in these programs were eight new kilns and 22 new grinding mills. These 16 plants, along with many others having minor programs, are known to have installed at least 11,400,000 bbl. of capacity during the year. Of this 11,400,000-bbl. total, perhaps 7.4 million bbl. was

new capacity, not replacement, and cost more than $86 million.

Capacity The total capacity estimated to have been installed in 1959—18 million bbl.—compares with the actual increase in the capacity of the portland cement industry in the 12 months ending in September, 1959, which, according to the U.S. Bureau of Mines, was 15,668,000 bbl. During 1958 about 81 percent of the year-end capacity was used, compared with official figures of 78.5 percent in 1957, and 90.6 percent in 1956. With the estimated capacity of the industry at the end of 1959 about 418 million bbl., and the 1959 output about 340 million bbl., only about 81 percent of the year-end capacity was utilized in that year. A considerable decrease in the percentage of utilization is expected in 1960 as the large amount of capacity being added will probably exceed any increase in sales.

FUTURE INCREASES

At this time the information available on the amount of capacity to be added to the industry in 1960 is necessarily incomplete, and only approximate estimates are possible. The eight new plants being built for 1960 completion are all in various stages of construction, but two or three of these may carry over into 1961, especially if the steel situation is not cleared up. Most of the large expansion and improvement programs can also be fairly definitely scheduled, but some of those under way could still be expanded or curtailed; and others not yet started could be postponed. Still others not yet announced could be started and completed within the year.

According to present information, not only will there be eight new plants completed in 1960, but major expansion programs will be completed in at least 12 other plants, two of these being essentially new plants built alongside existing operations. These projects will involve an estimated total of 20 new kilns and 43 grinding mills and will have a total capacity of about 23 million bbl. The cost of these additions, along with numerous minor programs, will be well over $180 million. About 21 million bbl. of this capacity is thought to be additional and not replacement of older equipment. Even allowing for the possibility that some of this work might be postponed or delayed for various reasons, it seems that at least 16 million bbl. is sure to be added, bringing industry capacity to a new high of about 434 million bbl. at the end of 1960.

New Plants There are at this time eight new plants known to be in various stages of construction, scheduled for completion in 1960. One of these is a white cement plant and one is a vertical-kiln plant. Two other additions to existing operations are essentially new plants but are dependent, to some extent, on existing facilities. Three other new plants are scheduled for completion in 1961. One of these is already under construction, and the other two have been definitely announced.

The eight new plants scheduled for completion in 1960 will have a total of 9 new kilns and 20 new grinding mills, and a combined capacity of about 12.3 million bbl. annually. Their total announced cost will be about $90 million. It is believed that all 11 million bbl. of this capacity will be new.

These eight new plants, now in various stages of construction, are those of the Century Cement Corp., Rosendale, N.Y.; Dewey Portland Cement Co., Tulsa, Okla.; Dundee Cement Co., Dundee, Mich.; Hawaiian Cement Corp., Oahu, Hawaii; Oklahoma Portland Cement Co., Pryor, Okla.; Permanente Cement Co., Hawaii; Riverside Cement Co., Crestmore, Calif.; and Texas Industries, Inc., Midlothian, Tex.

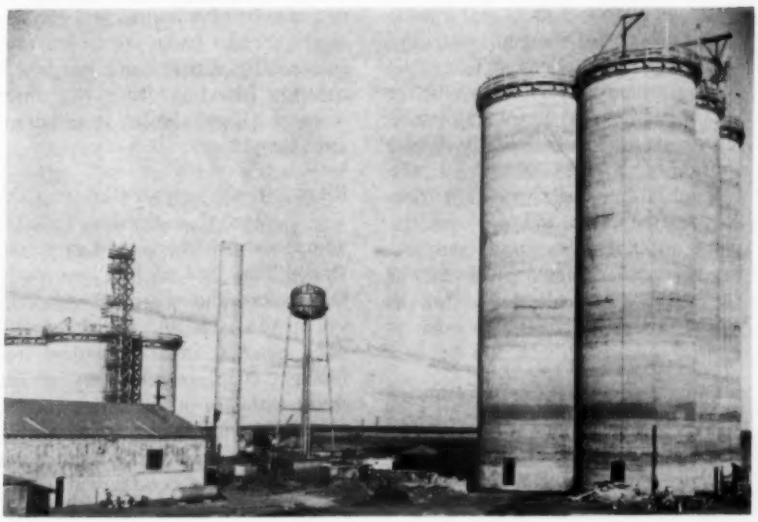
The two plants for 1961 completion for which plans have been announced are: Calaveras Cement Co., Redding, Calif.; and Ideal Cement Co., Clarkston, Wash. The General Portland Cement Co. has announced an expansion at Tampa, Fla., essentially a new plant.

Plant Expansion According to present information, at least 12 existing cement plants have important expansion and/or improvement programs under way or definitely planned for 1960 completion. These projects include 11 new kilns and at least 23 new mills, and involve a total capacity of at least 11 million bbl. About 9 million bbl. of this is expected to be added capacity. The total cost is estimated at about $90 million.

CHANGES IN OWNERSHIP

The Flintkote Co., on September 30 acquired the Calaveras Cement

A progress photo of the Oklahoma Portland Cement Company's new 1,000,000-bbl., dry-process plant at Pryor, Okla.



Co., with a 4,300,000-bbl. plant at San Andreas, Calif., which it is operating as a division. This is the latest in a series of planned steps by which the company will expand its many product lines throughout the country, including other nonmetals. Flintkote entered the cement business in August, 1957, when it acquired Kosmos Portland Cement Co., with a plant at Kosmosdale, Ky. In June, 1959, Flintkote acquired the Glens Falls Portland Cement Co., with a plant at Glens Falls, N.Y.

National Gypsum Co. extended its widespread holdings into the cement industry early in 1959, when it acquired the Huron Portland Cement Co. Huron, which operates probably the world's largest cement plant at Alpena, Mich., with a capacity of 13,500,000 bbl. annually, also has a clinker-grinding and -distributing plant at Superior, Wis., and distributing plants at 12 Great Lakes ports. The Alpena and Superior operations are now being expanded.

Volunteer Portland Cement Co. of Knoxville, Tenn., on September 28, 1959, became a subsidiary of Ideal Cement Co. The capacity of this plant is 3,000,000 bbl. annually.

A proposed merger of Dewey Portland Cement Co. and American-Marietta Co. was dropped when the boards of both companies voted against it in mid-October.

There were also a few changes within existing organizations. Early in 1959 the Consolidated Cement Corp., with plants at Cement City, Mich., Fredonia, Kans., and Paulding, Ohio, was merged with the General Portland Cement Co.

In December the Columbia-Southern Chemical Corp. announced the organization of a wholly-owned subsidiary to be known as the Columbia Cement Corp. The new corporation owns and operates the plant at Zanesville, Ohio, and will market the cement produced at Columbia-Southern's new plant at Barberton, Ohio.

TRENDS IN MANUFACTURE

As in 1958, the most important advances in the technology of cement manufacture were in the fields of automation and control. It also became apparent that the expenditures of the industry for modern new plants and expansions using the latest in equipment and controls were paying off in better and lower-cost cement and in reduction of labor. There was a definite acceleration during the year in the trend toward larger-diameter kilns and grinding mills, and the use of glass-bag kiln gas dust collectors is growing rapidly.

Automation and Control The trend toward greater automation and centralized remote control was greatly accelerated during 1959. There are now plants in which all operations from the crushing department to the cement storage silos are controlled from a single centralized board. At one new plant it is said that only two men are needed to operate the plant within those limits—one at the controls and one checking up periodically on the various departments. Special attention is being given to increased effectiveness of proportioning, blending, sampling and homogenization in storage, and improved quality control. There are a number of plants now using TV at the kiln discharge ends, and its use in other departments is growing rapidly.

The installation of a widely publicized, highly-automatic raw material crushing, storage, and blending system at a West Coast plant was completed early in 1959. The materials stored are X-ray-analyzed in a matter of minutes, and the analyses are fed to an electronic process-control digital computer which controls blending from the open storage. Other similar installations are planned.

Kilns It was apparent during the year that cement industry management is more than ever convinced that one of the best paths to greater efficiency and economy lies in the kilns and burning methods. Greater instrumentation and better control continue to be important factors, and the use of larger diameter and dumbbell-shaped kilns is growing rapidly. No sooner had one company disclosed that its new plant was to have 16½- by 15- by 16½- by 460-ft. kilns than another company announced a 16½- by 600-ft. kiln. At the same time, a Canadian firm was installing a 15- by 550-ft. kiln. The record apparently lies in Europe, however, where kilns are as large as 19- by 575-ft. have recently been installed. The use of dry-process kilns up to 660 ft. in length is especially notable.

There were no other startling kiln developments in 1959, but several types other than the regular rotary made some progress. An installation of a vertical type of portland cement kiln widely used in Europe and other parts of the world is nearing completion. The Allis-Chalmers ACL combination grate and rotary kiln has made considerable progress, especially in the Far East. The various types of preheaters all made progress, including the Fuller-Humboldt suspension-type preheater, the F. L. Smidth slurry preheater, and the Kennedy-Van Saun Grudex preheater.

The 500-bbl. per day pilot installation of the Fuller Co. Pyzel kiln, which is less than a year old, is reported to be in successful operation. Efforts have been concentrated on determining whether this process is capable of producing satisfactory clinker for the known types of portland cement. It is reported that the cements produced were superior, both in chemical and behavior characteristics. Alkalies, free lime, and sulphur compounds are negligible, and autoclave expansions are excellent. It is reported also that excellent clinker was produced from flue dust of high-alkali and -sulphur content after the correction of the analysis by small additions of limestone.

It is felt by the designers of the fluidized solids bed reactor that they have arrived at about the ultimate design, but that further exploration needs to be made into preferred apparatus and methods for recovering the heat, both in the preheating of the combustion and fluidizing air, and in the preheating of the raw material.

Dust Collectors The big development of the year in kiln gas dust collection was the rapid and widespread adoption by the industry of the silicone-coated glass

bag collector. Although this type of collector had been widely used for many years in other industries, the first plant installation in the cement industry went into operation in October, 1957. Since then others of various makes have been installed and many more are going in.

There are apparently some investigations being made on the possibility of economical recovery of potash and other materials from kiln stack gases. This is a renewal of a fairly widespread practice during World War I, when we were dependent on foreign sources for potash and cut off from them.

Other The trend toward larger-diameter grinding mills continued in 1959. Only a few years ago an 11- by 30-ft. mill driven by a 2,000-hp. motor was considered tremendous. Several new plants now have 12- by 34- or 36-ft. mills driven by 2,500-hp. motors, and another company plans to install 12- by 36-ft. compartment mills with 3,000-hp. motors.

There has also been increased use of such developments as radiation density meter control of slurry in wet-process plants; use of radioisotopes for various control purposes; and use of TV, especially on kilns. The development in 1959 of a pneumatic system for unloading bulk cement trucks is expected to effect considerable savings in delivery costs.

Alpha Portland Cement Company's plant at Jamesville, N. Y., showing the new fully-quadrated cement storage silos behind the older ones.

IMPORTS AND EXPORTS

Only partial information is available at this time on the imports of foreign cement into the United States in 1959, but there is no doubt that the total was considerably in excess of imports in 1958. Bureau of Mines figures for the first 9 months of the year show that 3,724,423 bbl. of portland cement were imported, a 65 percent increase over the 2,247,736-bbl. total for the same period of 1958. The value of imports was $9,134,762, as compared to $5,929,218 in the 1958 period. This indicates an average price of $2.45 per bbl. in 1959, compared to $2.64 in 1958 and $3.72 in 1957. The average price of domestic cement was $3.18 per bbl. in 1957, $3.25 in 1958, and about $3.35 in 1959. Obviously, much of the cement imported in 1959, and some of that in 1958, was dumped here at less than cost and certainly at less than the selling price in the country of origin.

Canada again led, with a total of 997,000 bbl. exported to this country in the first 9 months of 1959. Producing capacity in Canada is at present far in excess of needs, as it is here, but we exported only 87,580 bbl. into Canada during the same period. Colombia was second, with exports of 556,000 bbl.; Belgium was third, with 524,000 bbl.; West Germany fourth, with 437,000 bbl.; Norway, fifth, with 360,000 bbl.; and Israel, sixth, with 328,000 bbl. Others shipping into this country, in the order of importance, were: Sweden, Denmark, United Kingdom, Yugoslovia, Poland, Egypt, France, Japan, and Mexico.

Producers report steadily increasing imports of foreign cement, especially along the Atlantic seaboard in the New England states and in Florida. One producer points out that almost one million barrels of foreign cement entered the state of Connecticut alone, as compared to less than half that amount in 1958. In Providence, R.I., imports were reported to be in excess of 300,000 bbl., more than double the 1958 total. In June 12,900 bbl. of Japanese cement entered a Virginia port, more than 10,000 miles from the point of origin.

These imports are, as usual, exerting a depressing effect on prices out of all proportion to the quantities. It is held that the present tariff of 7.8 cents per bbl. is entirely inadequate to stem this flood. Lower labor costs in the countries of origin constitute an important factor, but some of this cement is said to be dumped at prices less than those received in their own country.

Exports of portland cement from the United States to foreign countries for the first 9 months of 1959 totaled only 128,182 bbl., only 34 percent of the 372,499 bbl. exported in the same 1958 period. The value of these exports was $514,196, or $4.01 per bbl., as compared to $1,505,820 or $4.04 per bbl. in 1958. Our exports of white cement were only 97,844 bbl., compared to 145,974 bbl. in the same period of 1958. Average prices were, respectively, $7.75 and $6.58 per bbl. Obviously, United States producers are not dumping cement.

Exports were made to 43 different countries, making it seem as if much of this was ballast for ships which had unloaded their cargoes here. Canada was by far the largest customer, with 87,580 bbl., yet this was only about 9 percent of our imports from Canada in the same period. Next in order of importance were Mexico, Costa Rica, the Bahamas, Liberia, and Venezuela.

In former years foreign cement came in only across our northern

and southern borders and along our coasts; but more recently even inland areas have received such shipments, especially in the Great Lakes area, which is now wide open through the St. Lawrence Seaway. With foreign cement selling on an average of a dollar less per bbl. than domestic cement, this relatively small amount of business—less than 2 percent of total sales in this country—has a depressing effect out of all proportion to its volume. This effect, it is reported, spreads from 50 to 100 miles or more from the port of entry.

PLANT EXPANSIONS

Allentown The Allentown Portland Cement Co. is installing a 9- by 127-ft. Traylor rotary kiln, to be used with a Fuller Humboldt preheater at its Evansville, Pa., plant.

Alpha The Alpha Portland Cement Co. has announced a 6-year schedule of improvements to total at least $5,000,000 annually. It is carrying out a $1,000,000 modernization program at its Cementon, N. Y., plant which is near completion. Included is a preheater for the No. 2 kiln, which is expected to increase its capacity 200,000 bbl. and reduce fuel consumption. A third preheater is planned for 1961, as well as 200,000-bbl. cement silos for 1960.

Ash Grove The Ash Grove Lime and Portland Cement Co. has started the first step in a complete new plant modernization of its Chanute, Kans., plant. Under construction are a 500-t.p.h. crushing plant, a 410-ft. long crane storage, stone drier for masonry cement, conveyors and unloading facilities, and provision for the installation of new kiln and raw and finish-mill departments. These were designed and are being built by the Macdonald Engineering Co. Bulk-loading silos have already been completed.

Calaveras-Flintkote The Flintkote Co. in November announced that its Calaveras Cement Co. Division, acquired in September, 1959, will build a new 1,500,000-bbl., $14,000,000 dry process cement plant near Redding, Calif. Completion is scheduled for about March, 1961. Equipment will include a 13½- by 12- by 425-ft. Allis-Chalmers kiln. Provision will be made for further expansion.

Columbia Cement The Columbia Cement Corp., a recently-formed, wholly-owned subsidiary of the Columbia-Southern Chemical Corp., in turn a division of the Pittsburgh Plate Glass Co., recently put in operation its new 1,500,00-bbl., $7,000,000 plant at Barberton, Ohio. It will be supplied from the company's 2300-ft. deep limestone mine, which has for some years been supplying its crushed stone plant there. Equipment includes a 13- by 14½- by 460-ft.kiln with a slurry preheater, a 1,5000-hp. Unidan raw mill, and a 2,000-hp. Unidan finish mill—all F. L. Smidth. The Macdonald Engineering Co. designed the plant and built the silos and bulk-loading facilities.

Coplay During the year the Coplay Cement Mfg. Co., Coplay, Pa., installed dust control equipment valued at $175,000. This is a part of a $500,000 modernization program, which will include remodeling of Coplay's two kilns.

Dewey Work was started in April, 1959, on the new 1,250,000-bbl., $12,000,000 plant of the Dewey Portland Cement Co. near Tulsa, Okla. One 12- by 425-ft. kiln and three 1,500-hp. mills—all F. L. Smidth—are being installed initially, but the plant is designed and basic equipment provides for two more kilns. This plant is expected to be in operation early in 1960.

Dragon The Dragon Cement Co. in 1959 completed a part of a $600,000 air pollution control program, at its Northampton, Pa., plant. This project includes glass-bag kiln gas dust collectors on the four kilns. Three new clinker coolers are being installed, as well as trucking facilities. At the Thomaston, Maine, plant additional cement storage bins and trucking facilities are being built.

Dundee The new 5,000,000-bbl. plant of Dundee Cement Co. at Dundee, Mich., is expected to go into operation in January, 1960. Major equipment includes two 16½- by 15- by 16½- by 460-ft. F. L. Smidth kilns—each rated at 8,000 bbl. per day—five 12- by 36-ft. Nordberg mills—two for raw- and three for finish-grinding—two 10- by 70-ft. Fuller horizontal grate clinker coolers, and Buell electrostatic precipitators. Design and construction of this plant was supervised by the engineering department of the St. Lawrence Cement Co., which is also a subsidiary of Holderbank Financiere, S. A., of Switzerland.

General The General Portland Cement Co., which late in 1958 completed a 2,500,000-bbl. $15,000,000 wet-process plant near Miami, Fla., has announced additional expansion for that area. A program is planned which will increase the present 4,000,000-bbl. capacity of its Tampa, Fla., plant by 3,000,000 bbl., at a cost of $17,000,000. Included will be facilities for doubling the production of white cement. A feature of this expansion is a 16½- by 600-ft. Allis-Chalmers kiln, said to be the largest wet-process unit in the country. The four 12- by 36-ft. Allis-Chalmers Compeb mills with 3,000-hp. motors are also of record size. This plant is expected to open early in 1961.

Giant The Giant Portland Cement Co. early in 1959 completed a new and completely modern $2,000,000 raw-grinding department at its Egypt, Pa., plant. This unit is a start in the general rehabilitation of the plant and was not built for the purpose of increasing capacity. The former raw department was converted to finish grinding. Equipment includes two 11-ft. by 16-ft. 10-in. F. L. Smidth raw mills equipped for drying in the air separator. A 140,000-bbl. bulk cement storage and loading installation was also completed. These additions were designed and built by the Macdonald Engineering Company.

Glens Falls-Flintkote The Glens Falls Portland Cement Co., which since June, 1959, has been a division of the

Flintkote Co., is reported to have completed a new $3,000,000 finish-grinding department late in 1959. This project included two 10- by 34-ft. Allis-chalmers Compeb mills with 1,500-hp. motors, air separators, dust collectors, etc.

Hawaiian Construction is reported to be well under way on the new 1,000,000-bbl. $12,000,000 plant of the Hawaiian Cement Corp. on Oahu Island, Hawaii. This plant is expected to be in operation late in 1960. The 10- by 12- by 240-ft. kiln and two 1,250-hp. mills were manufactured by F. L. Smidth and Co.

Hudson The Hudson Cement Corp., a wholly-owned subsidiary of the Colonial Sand and Stone Co., has near completion an extensive expansion program at its plant near Kingston, N. Y. The capacity of this new $3,500,000 operation, built late in 1958, is being increased from 900,000 bbl. to a total of 2,000,000 bbl. annually. Original equipment included an 11- by 320-ft. kiln and a rotary cooler (both Ansaldo, Italy). New equipment includes an 11½- by 425-ft. kiln, and 9½- by 43-ft. raw and clinker mills—all Kennedy-Van Saun. It is expected that much of the added capacity will be in excess of Colonial's own needs and will be marketed.

Huron-National Gypsum The Huron Portland Cement Company, now a subsidiary of the National Gypsum Company, late in 1959 completed a new 150,000-bbl. cement storage and distributing plant at St. Joseph, Mich.

Recently announced for the company's Alpena, Mich., plant, already one of the world's largest, was a new expansion program which will add 7,000 bbl. of clinker grinding capacity, for a total daily capacity of 53,000 bbl. A 12- by 36-ft. Kennedy-Van Saun clinker mill is included. This work is scheduled for completion by mid-1960.

Ideal The Ideal Cement Co's chief contribution to the cement industry in 1959 was its new 1,250,000-bbl., $14,000,000 dry-process plant at Tijeras, 16 miles east of Albuquerque, N. M. This plant went into operation in mid-year. Major equipment includes a 12- by 11- by 375-ft. kiln and two 11-ft. 6-in. by 17-ft. mills—all Allis-Chalmers. This is one of the most completely instrumented plants in existence, and it is also notable for the artistic use of concrete in its construction.

Expansion of the Tijeras plant is a part of the recently-announced $23,000,000 expansion program of Ideal, which will add 2,750,000 bbl. to the firm's total annual cement capacity. A second (duplicate) Allis-Chalmers kiln and related equipment will be installed which will double the plant's capacity to 2,500,000 bbl. by the end of 1960 at a cost of $7,000,000.

The new program also includes a new 1,500,000-bbl. plant to be built at Clarkston, Wash., at a cost of $14,000,000. Construction is scheduled to begin in 1960.

New storage and packing facilities will be built at the Superior, Nebr., plant at a cost of about $2,000,000.

At Ada, Okla., where one of two new 12- by 450-ft. Allis-Chalmers kilns went into operation late in 1958, the second was started up early in 1959. This $20,000,000 new wet-process plant now has a capacity of 3,000,000 bbl. annually. Other new equipment in this plant includes four 11- by 32-ft. Allis-Chalmers mills, two 6- by 100 ft. air-quenching clinker coolers, storage silos, etc. It supplements the original 2,150,000-bbl. plant there. The much-publicized new $2,500,000 rock-crushing and handling system to serve both plants recently went into operation. This system includes a 5½-mile long, 36-in. wide Link-Belt conveyor system with a capacity of 1,000 t.p.h., connecting the quarry to the plant. It is said to be the longest permanent belt conveyor system ever built.

Ideal has near completion a $1,700,000 cement distribution terminal at Vancouver, Wash., with silos and a packhouse. Cement can be received and shipped by ship or barge, and car and truck shipments can also be made.

Kosmos-Flintkote The Kosmos Portland Cement Co., which since August, 1957, has been a division of the Flinkote Co., announced plans in March, 1958, to increase the capacity of its Kosmosdale, Ky., plant with what will be virtually a new plant. A 1,000,000-bbl. increase to 3,200,000 bbl. annually will be achieved by adding a new 11- by 400-ft. dry-process kiln, a new raw department with two 11-ft. 6-in. by 17-ft. 8-in. raw mills, a 9- by 90-ft. clay drier, and a 6- by 20-ft. mortar mill—all Traylor. This equipment is expected to be in operation in 1960.

Lehigh Work was started by the Lehigh Portland Cement Co. in February, 1959, on what will eventually be a completely new plant at Mitchell, Ind. New equipment includes two 11½- by 400-ft. F. L. Smidth kilns which went into operation late in the year. These have a capacity about equal to that of the ten old 125-ft. kilns replaced, and this project is costing about $5,000,000. Other additions will be made over the years without interference to operation. The second stage will be the construction of new cement storage silos, a storage building, and a mill department, at a cost of $12,000,000. Five 1,250-hp. Smidth mills, two raw and three finish, will be installed in 1960.

Also completed late in 1959 was the installation of a $2,000,000 dust control system at Lehigh's Fogelsville, Pa., plant. Both electrostatic and mechanical bag collectors are included.

In mid-year Lehigh began a $7,500,000 modernization program at the Alsen, N. Y., plant. Four old kilns are being replaced by an 11½- by 400-ft. kiln of about equal capacity and a 1,250-hp. finish-grinding mill, both F. L. Smidth. New cement storage silos are included.

Lone Star Work is scheduled to begin soon on a $6,500,000 expansion of the Norfolk, Va., plant of the Lone Star Cement Corp. Included will be a 1,000,000-bbl. kiln, which will increase the capacity of the plant to 2,300,000 bbl. annually.

Louisville The Louisville Cement Co. early in 1959 began a $1,000,000 expansion program at its Speed, Ind., plant which was recently completed. Included was a new finish mill.

Also early in the year 12 new cement storage silos with a total capacity of 200,000 bbl. and a bulk-loading system were completed. These additions were a part of a $3,500,000 program carried out by the Macdonald Engineering Co., which late in 1958 installed an 11- by 390-ft. Allis-Chalmers kiln, a 10- by 34-ft. Compeb mill, etc.

Marquette The Marquette Cement Mfg. Co. in 1959 spent about $8,100,000 on large-scale modernization of its plants. This program will be continued at about the same level of annual expenditure for the next four years. During this time the plants at Superior, Ohio, Oglesby, Ill., and Cape Girardeau, Mo. (old dry plant) will be essentially rebuilt.

Early in 1959 Marquette announced plans for the expenditure of nearly $4,000,000 for improvements at its Nashville, Tenn., plant. Raw and finished material silos and slurry tanks were built by the Macdonald Engineering Co. At Rockmart, Ga., the raw- and finish-grinding departments were completely rebuilt.

Medusa The Medusa Portland Cement Co., Cleveland, Ohio, recently announced a 10-year program of expansion and modernization which will cost about $70,000,000. Capacity will be increased one-third to 16,000,000 bbl. annually.

The first step in the program, costing about $9,000,000, includes a 1,000,000-bbl. addition to the Dixon, Ill., plant which will increase its capacity about 40 percent. A new 11- by 400-ft. Allis-Chalmers dry process kiln is included for completion late in 1960. Over the next two years the plants at York, Pa., Toledo, Ohio, and Manitowoc, Wis., will be modernized.

Mississippi Valley Production was begun in January, 1959, at the new 680,000-bbl., $5,000,000 wet-process plant of the Mississippi Valley Portland Cement Co. at Redwood, Miss. The equipment in this plant includes a 10- by 400-ft. kiln, a 9- by 28-ft. raw mill and an 11- by 18-ft. finish mill—all Kennedy-Van Saun. Plans are being made to double the capacity of this plant.

Missouri The Missouri Portland Cement Co. in 1959 put in operation a complete clinker-grinding department with a 10- by 34-ft. Traylor mill, and built a machine shop and storeroom, and other buildings. This work was designed and built by the Macdonald Engineering Co. Another Macdonald project for 1960 includes the design and construction of truck-loading facilities with 25,000 bbl. of silo storage, scales, etc., and kiln-dust leaching tanks.

For the St. Louis plant Macdonald is designing a similar installation.

Northwestern States The Northwestern States Portland Cement Co. has under construction at Mason City, Iowa, a new plant addition with a capacity of 3,500 bbl. daily. This setup includes a new 500-t.p.h. secondary crushing and screening department, 220,000-bbl. raw and clinker silos, a 12- by 11½- by 400-ft. Allis-Chalmers dry-process kiln, an 11-ft. by 16-ft. 10-in. Smidth raw mill, a 9½-ft. by 36-ft. Smidth finish mill, a Wheelabrator glass bag kiln glass dust-controlling system, and 157,000-bbl. cement storage silos. These facilities were designed and are being built by the Macdonald Engineering Co. for completion in the summer of 1960. Storage silos of 150,000-bbl. capacity have already been built.

Oklahoma In mid-1959 construction was begun on a new 1,000,000-bbl., $6,500,000 dry process plant at Pryor, Okla., by the Oklahoma Cement Co. Completion is scheduled for April, 1960. This company had purchased the assets of the Ozark Portland Cement Co. and other property in the area. Major equipment includes an 11- by 375-ft. kiln, and 11- by 20-ft. raw and clinker mills—all Kennedy-Van Saun. The George A. Fuller Co. is general contractor and engineer on the job, and A. J. Anderson is the consulting engineer. The raw material blending and cement storage silos are being designed and built by the Macdonald Engineering Co.

Penn-Dixie The Penn-Dixie Cement Corp. has under way a $10,000,000, expansion and improvement program at its various plants. It recently completed a new crushing department at the West Des Moines, Iowa, plant. This 400-t.p.h. operation reduces quarry run stone to mill size.

Two 11- by 25-ft., 2-compartment Nordberg ball mills installed in a new department at the Kingsport, Tenn., plant will be operating soon.

Plans were announced in November for a major expansion of Penn-Dixie's plant at Clinchfield, Ga. This work will increase capacity 1,100,000 bbl. to a total of 2,300,000 bbl. by the fall of 1960. Equipment to be installed includes an 11½- by 450-ft. kiln, new raw- and finish-grinding departments, and additional storage for 150,000 bbl. of cement. This entire program is scheduled for completion by the fall of 1960.

A 9½- by 32-ft. Kennedy-Van Saun clinker mill is being installed at the Richard City, Tenn., plant for operation by March, 1960.

Programs of improvement are under way at the Nazareth, Bath, and Penn-Allen, Pa., plants to load and weigh cement for shipment by rail or truck. This project includes 120,000 bbl. of additional cement storage at Nazareth.

Permanente In mid-year the Permanente Cement Co. began the construction of a new 1,700,000-bbl., $13,500,000 plant in Hawaii, in the Waianae area of the island of Oahu. Production is scheduled to begin in August, 1960. Equipment will include a 13- by 14½- by 450-ft. F. L. Smidth kiln and Smidth mills which were fabricated in Kaiser's Napa, Calif., steel plant. Kaiser Engineers is handling engineering, design and construction. The Honolulu distributing plant is being enlarged. A cement distributing plant has been built on the island of Guam in the South Pacific.

A $1,000,000 expansion program was announced for Permanente's recently-acquired Olympic cement plant at Bellingham, Wash. New crushing and grinding facilities are included. A 2,000-hp. Smidth clinker mill was installed in 1959. A bulk-cement distributing plant was also opened at Long Beach Calif.

Phoenix-American The Phoenix Cement Co., a division of the American Cement Corp., late in 1959 put in operation its new 1,800,000-bbl., $16,000,000 dry-process plant at Clarkdale, Ariz. Construction of this plant was begun late in 1958. Equipment includes two 10- by 12- by 350-ft. kilns and three 1,250-hp. ball mills, all F. L. Smidth. A reclaimer raw storage and blending system has been installed which is similar to that recently completed at the Oro Grande, Calif., plant of the Riverside Cement Co., also a division of the American Cement Corp. The Phoenix plant was built to supply 3,000,000 bbl. of cement over a 5-year period for the Glen Canyon Dam and power plant being built on the Colorado River in north-central Arizona. Cement silos, packhouse, and blending tanks were designed and built by the Macdonald Engineering Co.

Pittsburgh The Green Bag Cement Div. of the Pittsburgh Coke & Chemical Co. is building a new $250,000 distributing plant near Marietta, Ohio. A 4,700-bbl. self-unloading barge will be used to haul bulk cement from the company's cement plant on Neville Island, near Pittsburgh.

Puerto Rico The Puerto Rico Cement Co., San Juan, Puerto Rico, is expanding its plant by the addition of a 14- by 12½- by 465-ft. Allis-Chalmers wet-process kiln. Installation is expected to be completed late in 1960.

Riverside-American The Riverside Cement Company, a division of the American Cement Corp., early in 1959 put in operation a new $5,800,000 crushing, and blending system at its Oro Grande, Calif., plant. It is controlled by a Thompson-Ramo-Wooldridge RW100 electronic process control digital computer, believed to be the first such installation in the cement industry. This system automatically stores, blends, and reclaims the raw materials in a 140,000-ton ground storage. These materials are X-ray analyzed and blended from storage through the computer in a matter of minutes. A twin clinker storage and reclaiming system is pushbutton-controlled. The belt conveyors, screens, stackers, and reclaimers were supplied by Hewitt-Robins.

Also completed was a $3,600,000 expansion of the Oro Grande plant including two 12- by 10- by 310-ft. Allis-Chalmers kilns with 2-stage flash preheaters, Fuller horizontal grate coolers, and electrostatic dust precipitators. These 1,200,000-bbl. dry-process kilns replaced five old kilns of about half their combined capacity, which have been dismantled and sold, and increased plant capacity by 1,200,000 bbl. to 6,000,000 bbl. annually. These kilns are under complete Foxboro electronic control, with all process variables, including pressures, temperatures, motion, differential pressures, motor speeds, gas-analysis, and gas-air ratios in a fully co-ordinated instrument system. This is a part of a long range program which calls for an ultimate total of five new kilns.

In December, 1958, Riverside announced the purchase of land and the completion of engineering plans for a new white cement plant to be built near the company's present Crestmore plant. Equipment is to be supplied by F. L. Smidth & Co.

San Antonio The San Antonio Portland Cement Co., San Antonio, Tex., has installed a 300-hp. ball mill and an 800-hp. tube mill—both F. L. Smidth—in its raw-grinding department.

Southern-American-Marietta The Southern Cement Co., a division of the American-Marietta Co., is reported in mid-1959 to have completed the installion of a new 1,250,000-bbl. kiln at its Roberta, Ala., plant.

Southwestern The Southwestern Portland Cement Co. late in 1959 completed its new 1,250,000-bbl., $12,000,000 wet-process plast at Odessa, Tex. This is one of the most highly instrumented plants in existence. Equipment includes an 11½- by 400-ft. F. L. Smidth kiln and two 11- by 17-ft. Allis-Chalmers mills. The Macdonald Engineering Co. built the 150,000-bb. cement silos and two homogenizing installations.

Standard Lime-American-Marietta The Standard Lime and Cement Co., a division of the American-Marietta Co., early in 1959 began the installation of a 1,400,000-bbl. addition at its Martinsburg, W. Va., plant. This work included a 12- by 450-ft. wet-process kiln, a 9- by 13-ft. preliminary raw mill, a 10- by 32-ft. 2-compartment secondary raw mill, and 11½- by 17-ft. 8-in. and 10- by 32-ft. finish mills—all Traylor. This installations went into operation in August, 1959.

Texas Industries Construction was begun in October on the new 1,400,000-bbl., $14,000,000 wet-process plant of Texas Industries, Inc., at Midlothian, Tex. It is expected to be in operation in the late fall of 1960. Major equipment includes a 12- by 450-ft. kiln, a 10- by 38½- ft. raw mill, and an 11-ft. by 34-ft. finish mill—all Traylor. This company is probably the world's largest producer of lightweight aggregates and also one of the largest manufacturers of various concrete products and of ready-mixed concrete. Raw material, clinker, and cement silos are being designed and built by the Macdonald Engineering Co.

Universal Atlas The Universal Atlas Cement Co. late in 1959 completed the installation of a $300,000 fiber glass bag dust collecting system on the No. 2 kiln of its Northhampton, Pa., plant.

Utah The Portland Cement Co. of Utah early in 1959 began a $1,500,000 expansion of its plant at Salt Lake City which will double its capacity to 1,000,000 bbl. annually. Equipment being installed includes a 10- by 300-ft. Allis-Chalmers wet-process kiln, feeders, cement pumps, atomic control devices, etc. The three kilns (one new) will have mechanical dust collectors, followed by silicone-treated glass bag collectors for the exit gases. This work is expected to be completed late in 1960.

Whitehall The Whitehall Cement Mfg. Co., Cementon, Pa., is reported to have installed two 11½- by 17-ft. 8-in., 1,250-hp. Traylor raw mills.

Aggregate Industries:

■ Follow Habit of Toppling Records

By BUREN C. HEROD

ANOTHER set of records, and an alignment with the normal economic growth pattern, have been established by the major segments of the aggregates industries in the last two years. Data gathered throughout the last weeks of 1959 in the annual PIT and QUARRY survey of producers—along with analyses provided by top officers of the various national industry associations and other authorities—indicate that spurts and gaps experienced in aggregate markets in recent years have been rather evened out. Generally, these industries have settled down, after periodic sharp gains, in conformity with the the overall economy and a levelling from its spasmodic peaks in the last decade. In short, the greater part of them are now geared to the long pull.

The major tonnage groups—sand and gravel and crushed stone—reached new production and sales peaks in 1958, as estimated here last year. According to the estimates of those best informed—the pro-

Our survey data are broken down to these major divisions except for the South which is divided into Southeast and Southwest.

ducers surveyed—both of these primary aggregate categories will record new highs for 1959. It appears, however, that a lower percentage of gain will be indicated, an expectation that naturally parallels construction statistics.

Agricultural limestone reflected another major area of the national economy, the activity of the U. S. farmer, and realized an increase in consumption of 2 to 5 percent in 1958. Variables related to national farm programs and economics are no help in estimating future agstone usage—a really critical factor both to current crop yield and to the nation's health in the event of atomic conflict. However, on the basis of present and future (through 1960) commitments to the conservation program as pegged by the Congress, consumption during the last year remained at about the same level, and next year's consumption will do the same. Leaders in the industry association look for a short-sighted political attempt at curtailing ACP programs, (which include aglime application) in fiscal 1961.

An 18 percent drop, close to the prediction of the National Slag Association's managing director, was realized by the slag industry in 1958. This, of course, was due to the reduced blast-furnace production of that period. However, demand was met by greater use of stockpiles.

1959 was undoubtedly headed for a record, until the strike late in the year. Again demands were met with supplements from stockpiles, and total utilization will approximately equal that of 1958. Unless there is a resumption of the steel strike, industry leaders say, "We should have another good year and realize a 35,000,000-ton output in 1960."

A nationwide cross section of industry producers was obtained by mailing PIT and QUARRY survey questionnaires to several thousand operators. In asking for details covering a three-year period, we have found that projections based on data submitted have had a higher degree of accuracy. These data form the basis for most of the conclusions reached here.

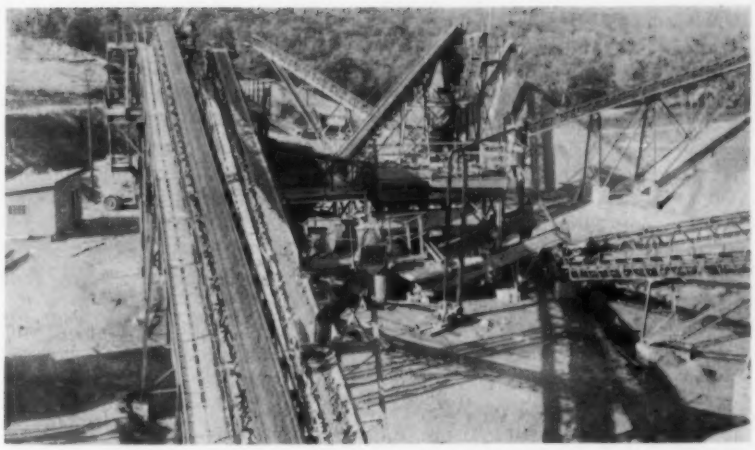
This information is also compared with the latest U. S. Bureau of Mines statistics, as well as comments received from industry association staffs. The procedure relates to both the experience of the immediately preceding annual period, and to what is expected for the coming 12 months.

On the basis of the above, it was estimated last year that 1958 production of sand and gravel would reach 635,000,000 tons. While this would have been another record, it was actually 6 percent *under* the actual output of 680,000,000 tons (per Bureau of Mines).

Production in 1959 will show a comparable rise, according to the producers—and an increase of about 5 percent. In line with the professional economists' projections for next year, the working producer seems to feel that demand will be steady, but at a lower rate.

By the end of 1960, sand and gravel producers will have attained another record, according to the survey, but the predicted gain will represent a deceleration in the climb of recent years.

The crushed stone industry performed in general as the producers indicated last year. Production in 1958, according to Bureau of Mines data, was 436,000,000 tons— slightly above that of the preceding year. (All figures presented here on crushed stone exclude that consumed in cement or lime.)



This new 200-t.p.h. sand and gravel operation at Masten Lake, N. Y., was put into operation last year by Sullivan Highway Products Corp., Summitville, N. Y., to replace an older facility.

A record was again set by that 1958 total, as is also reported in the estimated production for 1959. According to last year's performance, crushed stone operations in total apparently gained a new peak of about 455,000,000 tons.

Calm optimism prevails in the estimates provided in the questionnaires returned late in 1959, and a smaller, but further gain is anticipated for 1960. Information furnished by the operators indicates that between 450,000,000 and 460,000,000 tons of crushed stone will be produced this year.

The following detailed information, categorized to capacities, wages, prices, etc., has been tabulated on the basis of geographic sectors comparable to the market areas delineated by the U. S. Department of Commerce.

Our policy dictates that each of the great number of returns received in our annual survey shall be confidentally considered on its own merits. Therefore, no individual figures are divulged here, and returns are grouped to develop regional and national averages.

SAND AND GRAVEL

An average of producers' estimates last year, on a countrywide basis, indicated a gain in 1958 (over 1957) of 2 to 5 percent. The actual

gain was 8 percent, (based on a later upward revision of Bureau of Mines figures) to 680,000,000 tons.

Production in 1959 was still higher, according to the survey; and as noted earlier, will probably be in the neighborhood of 725,000,000 tons.

What will 1960 show? Paralleling the projected construction picture, the sand and gravel operators, taken as a national group, will possibly show a gain of a few percent to approximately 735,000,000 tons. In support of this estimate is the fact that four times as many producers have indicated an expected gain in 1960 as those that anticipate a decrease. Further, those who expect a decline, look for a rather small one, and their optimistic colleagues anticipate a 15 percent or better improvement.

Hourly Capacity Weighted regional averages indicate that hourly capacity, nationwide, rose about 11 percent. Similar gains have been reported in recent years, but they are expected to stabilize in view of the industry's previous expansion to accommodate highway and other expedited construction programs. According to this latest survey, the Southwest recorded the sharpest increase, which is in line with greater mileage of road construction in that area.

Selling Price **Unit prices were up,** per operators' figures—but not as much as labor and other costs. This fact lends emphasis to the close attention paid by producers to operating efficiency and cost control as witnessed by the PIT and QUARRY staff in numerous field contacts.

The prices for both sand and gravel were up by 4 and 3 percent, respectively, on a national average. However, regionally, only the Southwest reported a slight dip. This, again, can be related to highway construction in that section, where the road program appears to have had a direct effect on 60 percent or more of aggregates operations. In this area, volume had its natural effect on unit price.

Wages **Labor costs rose** twice as much as the selling prices, producers report. The nationwide average was 7 percent. Considering the profit margin in this industry, it becomes obvious even to the uninitiated that the average producer must concentrate on production efficiency since he has little or no recourse in any other direction.

The West continues to lead the country in hourly rate (and, incidentally, rose 5 percent last year), but operators there have apparently achieved a tons-per-man-hour ratio as good as, or better than, the average across the country.

General Operation Data For background information on the above, the survey again requested data on equipment trends, operating methods, production periods, and related data, and most of the producers again graciously replied. With the other figures, this information was used to establish regional and national averages for the various factors.

Nationally, the industry maintained its average of operating 11 months out of the year. Lesser averages were, of course, found in areas of hardier climate.

An increasing number of operations are supplied from wet pits or dredging facilities. The increase reported is not large but it is significant. Once more in reference to profit margins, producers are apparently exploiting to the fullest the existing areas (which often will take them below the water table) to avoid costs inherent in developing new areas. Zoning is an omnipresent factor here, also.

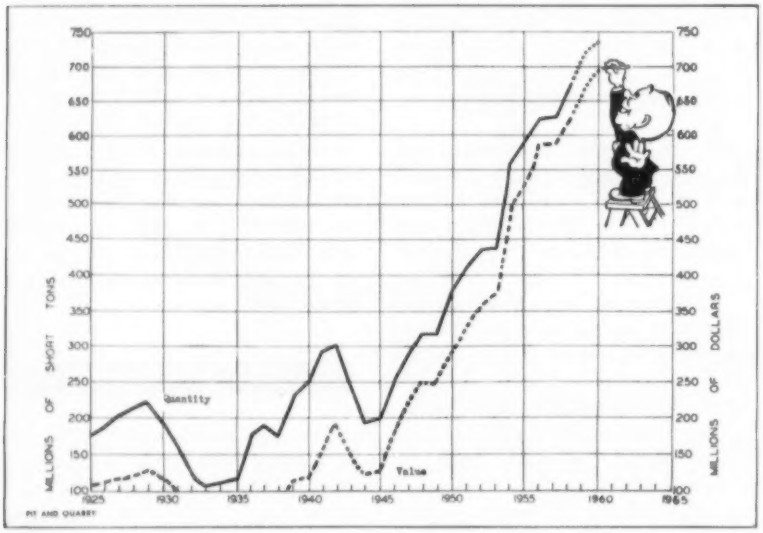
In an allied phase, it seems that more operators are taking advantage of the potential in portable plants to expand their market areas.

Current trends in material specifications have also made a very definite impact on operating methods. A further increase in the number of sand and gravel operations incorporating crushing phases is evident. According to the latest survey, over 55 percent of sand-and-gravel plants have crushers in the flowline, and over 50 percent of the gravel processed is crushed.

Outlook **Production in 1960** is estimated at 735,000,000 tons, a figure based on operators' projections, and in turn considered in light of estimated total new construction this year (joint determination of the Department of Commerce and the Department of Labor). The latter anticipates a gain of about 2 percent.

Being faced with the day-to-day

Sand and gravel production data through 1958 are adapted from the latest Bureau of Mines statistics. Figures for 1959 and 1960 represent estimates based on survey replies.



An overall view of the huge 2,200-t.p.h. dual-flow crushed stone plant of Channel Constructors at Niagara Falls, N. Y., put in operation early last year. The plant will provide about 10,000,000 tons of aggregates for construction of the immense Niagara Power Project.

competition of local business and markets, the outlook of producers merits attention. Since more than 70 percent of those replying to our survey have stated that they will spend time and money on expansion, modernization, or new plants, the coming year gives no indication of backsliding.

In hard cash, these plans are backed up by an average expenditure of $35,000 (on a national average) by each producer who has such projects on the board or in progress.

The highway program has made its expected impact on the industry, and a smaller percentage of the answering producers indicate expansion plans directly related to that market. A large number, of course, have already been affected or are currently affected by that program.

CRUSHED STONE

The nail was hit squarely on the head by crushed stone producers in their reports a year ago. At that time, they estimated that 1958 production would approximately equal that of the preceding year. Final Bureau of Mines figures show a 1958 output of nearly 436,500,000 tons—less than 1 percent gain, but still a new peak for the industry.

A greater increase was apparently recorded in 1959—a situation which the producers predicted last year, and which is apparently confirmed by our survey.

Another record—this time of 455,000,000 tons—will be reached in 1959 in terms of a 5 percent increase on a national industry average.

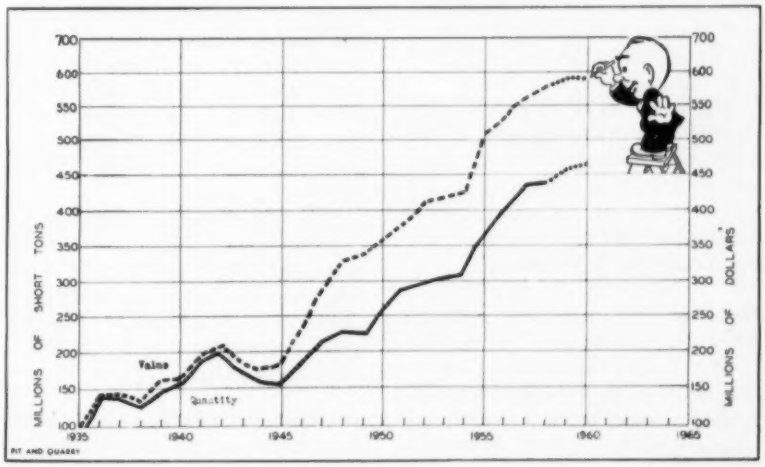
The 1960 outlook? In a 5 to 1 ratio, optimistic producers outnumber those who expect to see a decline in markets this year. In a somewhat "neutral" vein, approximately one-third of those answering expect to have a business year at least as good as 1959.

Gains expected average 20 percent—so do anticipated declines. However, in view of the predominantly favorable attitude, it seems probable that crushed stone production and sales (exclusive of that used for cement and lime) this year will be in the neighborhood of 457,000,000 tons.

Hourly Capacity **Greater hourly capacity** was provided in all but one region, according to the survey. In the West, which already had a high rate, no change was recorded. On a national average, the increase amounted to 15 percent.

The largest gain was reported in the Northeast—a region which also

Crushed stone production figures through 1958 are based on Bureau of Mines data. Those for 1959 and 1960 are based on our survey. Both exclude stone used in cement or lime.



Lycoming Silica Sand Company's Jersey Shore, Pa., plant has an unusual agstone operation (left structure). Designed and built as a separate department of a highly flexible processing flow, it has a capacity of 22 t.p.h. of 100 percent minus 20-mesh agstone.

indicates significant expansion plans, and an expected higher rate of construction in the road program.

Selling Price **A Relatively static condition** has prevailed in the pricing of crushed stone aggregates in the last two years. Actually, the stabilization has been pretty much in effect since 1956.

Only a slightly more favorable profit margin is enjoyed by the average crushed stone operator than his colleague in the sand-and-gravel industry, and his intensified interests in production efficiency are a commonly-found parallel in the field experience of PIT AND QUARRY'S staff.

Wages **Up again were labor costs,** the producers report. While prices remained at about the same level, wages rose by 7 percent, our latest survey indicates.

The West consistently reports the highest labor cost—but also, in the latest returns, has one of the highest ton-per-man-hour ratios. Greater percentage of increase in labor costs were reported by producers in the Northeast and Southwest.

General Data In an area of potential significance, a number of producers note the development of deposits by an underground method. While it is not large, with respect to the total number of crushed stone operations, the group has apparently grown. This should increase interest in the relative advantages of such a method.

It also appears that somewhat more crushed stone operators than sand and gravel producers are taking advantage of portable plants to maintain or augment markets.

Also indicated in the survey is a situation more than substantiated by field contacts—that of the constantly increasing number of secondary, and even tertiary, crushing units brought into play to meet the spreading tide of specifications calling for even greater tonnages of smaller fractions.

Outlook **About 80 percent** of the answering producers felt that their business in 1960 would be at least as good or better than last year. In fact, more than half of this group indicated they expected to gain up to 25 percent—an optimistic viewpoint very similar to that expressed a year ago.

The majority would appear to be "putting their money where their mouth is." More than a third indicate plans for expansion through addition of new equipment (quarry and/or processing) or the construction of new plants.

Money earmarked for these programs averages out (nationally) at more than $60,000 per company on those reporting such projects.

About the same number of crushed stone and sand-and-gravel producers expect to be affected little if any by the highway program.

Approximately one-fourth, however, anticipate the need for expansion to meet highway construction demands, and a significant part of that expansion will be represented by completely new plants, it was reported.

AGRICULTURAL LIMESTONE

A rather constant rate of consumption has been realized for this commodity in recent years—due primarily to the fact that appropriations for the Agricultural Conservation Program have remained the same.

Actually, in 1958 the usage of this material on the nation's farms rose slightly above the estimate furnished by the industry's association leaders. In view of the ACP funds available for this practice through fiscal 1960, it is probable that agstone consumption last year remained very close to the 1958 level, and this year will do the same.

Despite estimates of scientists and specialists in agriculture which indicate that the nation's soils require the minimum of 80,000,000 tons of this material annually, usage according to the latest statistics represent only a little more than 25 percent of requirements.

Although agricultural agencies, colleges, the industry association, and even the fertilizer companies have pooled efforts toward educating farmers on the need for liming, ACP has apparently furnished most of the stimulus for current application levels.

An encouraging situation developed, however, in the general performance of the 40 states reporting agstone application in 1958. In comparison with the preceding year, when the states were evenly divided between those using more and those using less liming materials, 1958 reports show that 25 of the 40 states indicate increased usage ranging from 1 to 100 percent above 1957.

Six of the top ten consuming states

were again among the group of states reporting greater agstone use. Leading was Illinois, the consistent forerunner, with a total of 3,531,000 tons. The other top states, in order of rank, were Indiana, Missouri, Ohio, Wisconsin, Iowa, Kentucky, Pennsylvania, New York, and Tennessee.

SLAG

High demand was enjoyed by slag processors in 1958—but they were also hampered by curtailed activity in blast-furnace operations. According to the latest complete annual figures, developed co-operatively by the National Slag Association and the Bureau of Mines, more slag was processed than the furnaces produced—due solely to the fact that processors dug deeper into rapidly depleting slag banks.

However, the steel cutback had its effect: the quantity of slag processed dropped 18 percent from the preceding year, to a total of 28,400,000 tons. This output was sold for $45,000,000—a drop of 13 percent.

Of the total output, 73 percent was represented by screened, air-cooled slag, the major type. Production of the latter was 20,000,000 tons, or a decline of 19 percent from the preceding year. The remainder of total output was comprised of unscreened air-cooled slag, 5 percent; granulated, 12 percent; and expanded, 10 percent. The latter category actually achieved a new record of 2,900,000 tons.

About 90 percent of the screened, air-cooled material was used in highway and airport construction (other than in portland cement or bitiuminous concretes), bituminous construction of all types, railroad ballast, portland cement concrete, concrete masonry manufacture, and miscellaneous uses, in that order.

Most of the unscreened, air-cooled slag was also used in highway and airport construction. Granulated slag was marketed primarily to hydraulic cement manufacture and highway construction, while the expanded material was used mainly as lightweight aggregate in concrete masonry production.

The consistent accuracy of estimates furnished us in past years by the managing director of the industry association was maintained by those of a year ago—the predicted decline of 15 percent was only 3 percent conservative. Due to the steel strike last fall, it seems quite possible that processed slag in 1959 may drop below 25,000,000 tons.

1960 prospects are quite favorable, our respondent notes, and in the absence of another strike this year, the industry should regain its earlier record of processing 35,000,000 tons.

LIGHTWEIGHT AGGREGATE

The companion survey of ready-mixed concrete, concrete masonry, and allied industries in our sister publication, MODERN CONCRETE, indicates that more than 50 percent of concrete masonry units produced last year incorporated lightweight aggregates. This is comparable but slightly higher than indicated in reports of recently preceding years.

Total production of masonry units apparently rose about 11 percent last year, which would indicate that more than 1,100,000 8-in. equivalent units incorporated lightweight aggregates. Nearly 80 percent of the latter was comprised of expanded shale, expanded slags, and expanded clay. These three, plus pumice and cinders, were apparently utilized in the amount of approximately 17,500,000 cu. yd.

Optimism for another good year is indicated by about half of the concrete masonry producers, with estimated gains as high as 18 percent. Accordingly, consumption of lightweight aggregates would probably climb to 18,500,000 cu. yd. or more.

Expanded Slag Production of this material, as noted earlier, totalled nearly 3,000,000 tons in 1958, and broke the previous record established in 1956. Nearly 97 percent of this amount was used as aggregate by concrete masonry producers, and was valued at $8,320,000—about 4 percent higher than 1957. Lightweight concrete utilized 2 percent of all expanded slag sold.

Vermiculite A slight drop—just a fraction over one percent—was recorded in production of vermiculite during 1958. This was an appreciable reduction in the rate of decline experienced in the preceding three years.

Approximately 182,000 tons, after preparation for exfoliation, was valued at $2,610,000, or a slight gain, according to U. S. Bureau of Mines data. Most of the exfoliated material was marketed for loose fill insulation, building plaster, and lightweight concrete. An increased market in the latter was enjoyed. Another prime category was a noncementitious, plastic, acoustical, and fireproofing material.

An industry authority notes the development of two completely new products. A water-repellent masonry fill was the first of these. The other, just out, is a vermiculite Type MK fireproofing surfacing designed for one-coat application.

The same source of information indicates that the industry may have gained a little ground in 1959, and that 1960 will probably maintain the favorable pace.

Perlite After having experienced an excellent climbing record of production for several years, the perlite industry dropped off 12 percent (crude output) in 1958 to 372,000 tons. Sales and use of crude, however, was down only 3 percent.

Expanded perlite sales also dropped by a nominal 2 percent.

All crude was extracted from 14 mines in 6 states—New Mexico producing nearly 70 percent of the total.

Pumice An increase of 8 percent in quantity and 14 percent in value over 1957 was achieved by the pumice industry in 1958. A total of 1,970,000 tons of pumice and pumiceous materials was sold or used.

New Mexico is also the leading producing state for this material, accounting for 26 percent of all domestic output.

Nearly 44 percent of this commodity was used as concrete admixtures and concrete aggregates, now the leading use categories. This is a 21 percent jump over 1957.

Other Nonmetals:

■ Many Gain Strength— Recoup with Overall Economy

By BUREN C. HEROD

AS pointed out in this section of the review and forecast presented in January a year ago, the activity of the country's varied industry segments, particularly construction, chemical, and heavy manufacturing, was closely paralleled by the production and/or sales of many nonmetallic minerals—especially of the major group. The resurgence of the national economy was mirrored by operations of the nonmetals closely allied to the industries cited above.

It was noted here last January that, on the basis of then available data obtained from industry sources and the U. S. Bureau of Mines, there had been a downward slant in most markets—but that headlong slides should not be anticipated. This observation has been supported by the records of many nonmetals during the last year.

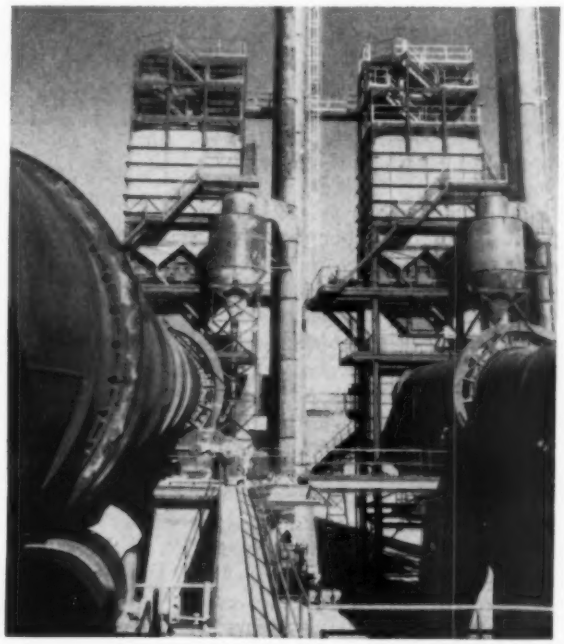
Final 1958 data on all commodities discussed below, and for some quarters of the last year on certain materials, has been compiled by the Bureau of Mines. These data, along with information from production officials, indicate that some of the major nonmetallics registered sharp gains, and in some cases approached new records. Other commodities, if not completely reversing the downward trend of about 18 months ago, at least materially reduced the rate of decrease experienced then.

Neither boom nor bust appears to be applicable to the future. Calm optimism has been noted in most quarters, with the expectation that relatively normal economic patterns will prevail. This condition would indicate that stable growth of the gross national product will be reflected in nonmetallics operations and markets.

The big "if", of course, relates to the situation in the steel industry, and its impact on the overall economy in the event of a resumption of the strike. On the premise that difficulties there are successfully negotiated, it may be expected that nonmetallics in general will enjoy prospects at least as good as those of the last year.

In addition to the latest tonnage statistics compiled by the Bureau of Mines, pertinent background information available on some of these commodities is presented in the following report. Among the leaders in the nonmetallics considered here, lime and gypsum displayed the most remarkable performance.

The resurgence displayed by lime in the last quarter of 1958—allied

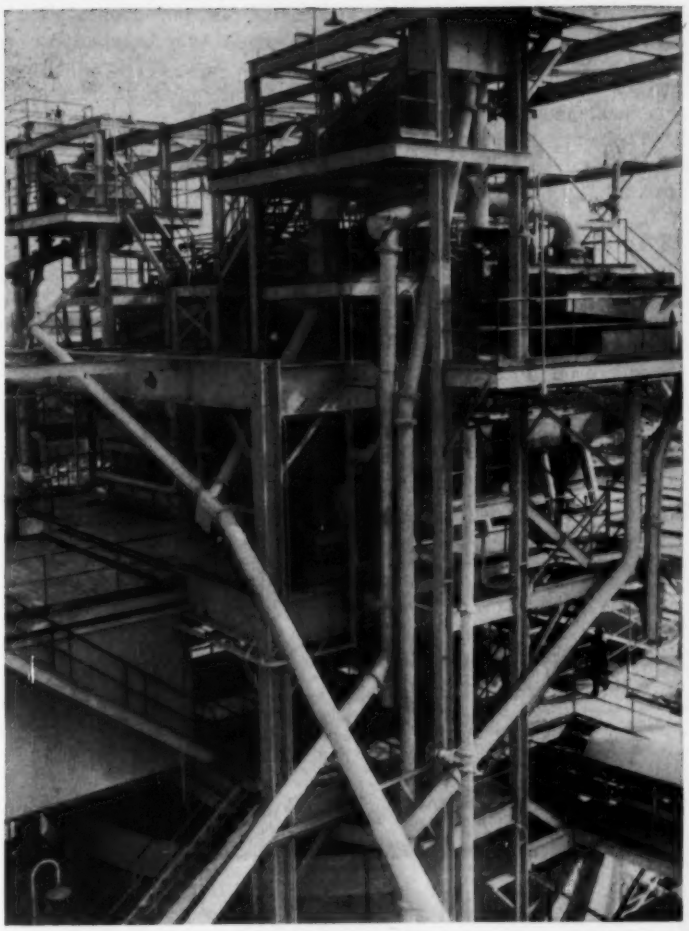


Taken at the Apex, Nev., plant of United States Lime Products Corporation, this view between the two 10- by 151-ft. kilns shows the feed bins, preheaters, stacks, and cyclone dust collectors. Capacity is 400 t.p.d. of lime.

to increased steel activity—brought it well above the figure anticipated for the full year. Had it not been for the steel strike of recent months, lime very probably would have been headed for a record in 1959. As it is, its impressive record through September should indicate a final production figure for the year very close to the 9,000,000 plus tons of 1958.

By June of last year, gypsum had already shown an impressive gain over the production rate of the comparable six-month period of 1958—and the final figures for the latter year were only 10 percent under the industry's all-time high in crude output. In view of the gain in housing starts during 1959 over those of the preceding year, gypsum may well come near the record 10,600,000-ton performance of 1955.

Phosphate, as predicted last year, settled down to a more nearly normal operating pattern during 1958 after having recouped from the effects of an earlier strike, and subsequent efforts to re-establish stocks. Fluorspar, potash, mica, and special clays were among those commodities whose earlier decline had become less steep.



At Orange Park, Fla., American Cyanamid Company built a new phosphate washer which, like a sister plant, employs flotation on coarse feed. These are said to be the only two such installations using that method. Seen here is the feed preparation building where coarse, medium, and fine splits are made.

Lime **Open-market lime sales** through last September reached a very encouraging level, particularly in view of curtailed steel production. For the first nine months of 1959, Bureau of Mines figures indicate that 6,800,000 tons were sold. This figure represents a 23 percent improvement over the comparable period of 1958, and is also slightly above that of the first nine months of 1956—the record year of the lime industry. (Note that these figures represent open-market lime almost exclusively, and also do not include production from plants manufacturing less than 10,000 tons annually.)

Quicklime represents 77 percent of the total open-market sales from January to September, and hydrate the balance. Hydrate tonnage remained at about the same level as during that period of the preceding year, and quicklime recorded the major portion of the increased sales.

In all four categories of use—agri-

Lime Sold or Used By U.S. Producers 1957-58

(U.S. Bureau of Mines Data)

	Quicklime	Hydrate	Total Tonnage 1958	Total Tonnage 1957
Agricultural:				
Sold	76,150	119,975	196,125	208,600
Used				
			196,125	208,600
Building:				
Sold	103,210	1,025,665	1,128,875	1,037,689
Used	48,358	15,654	64,012	63,621
			1,192,887	1,101,310
Chemical, Industrial:				
Sold	3,725,442	696,717	4,422,159	5,038,134
Used	1,584,551	156,066	1,740,617	1,675,034
			6,162,776	6,713,168
Refractory:				
Sold			1,641,072	2,231,709
Used			18,112	19,719
			1,659,184	2,251,428
Total (all)			9,210,972	10,274,506

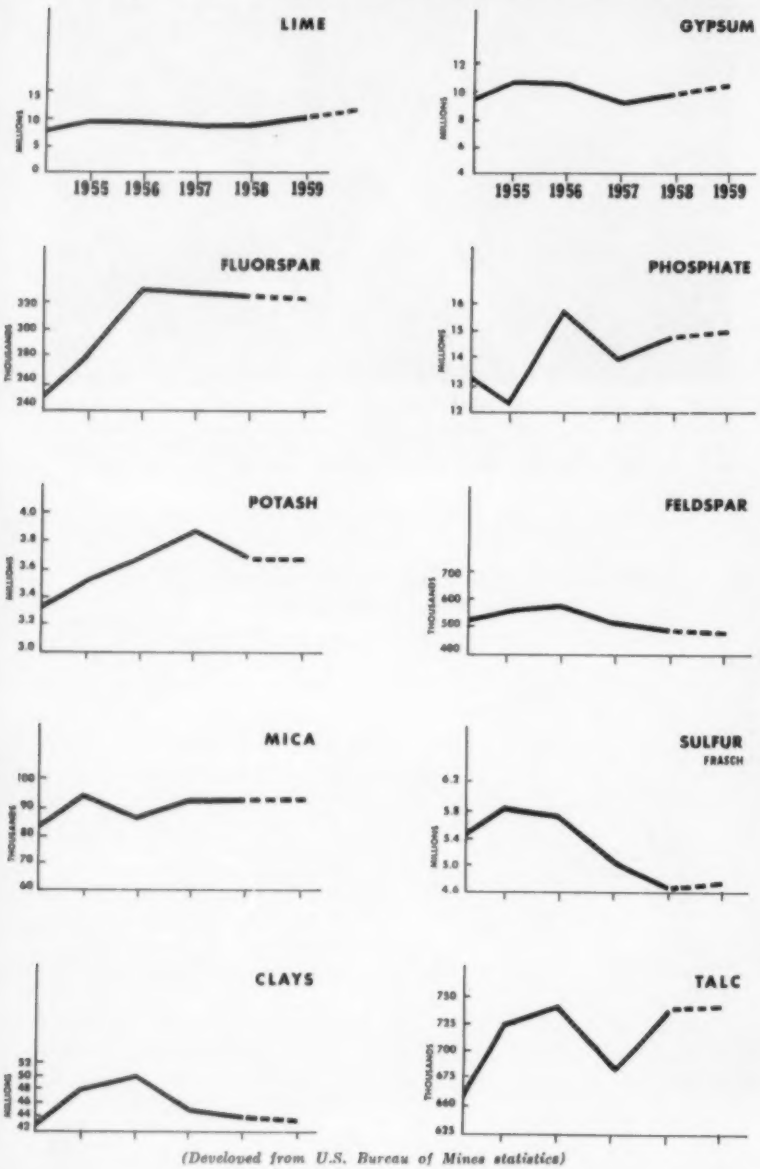
cultural, construction, chemical and other industrial, and refractory—increases were noted. The latter registered an increase of 29 percent; chemical and other industrial rose 24 percent; and construction and agricultural gained 10 and about 1 percent, respectively.

Total production in 1958 as reported to the Bureau amounted to 9,200,000 short tons. As expected by the industry's association staff, the open-market portion of that tonnage proved to be 7,400,000 tons. On the basis of performance during the first nine months of 1959, last year's total production should approximate 10,500,000 tons — only slightly under the 1956 record.

What's expected in 1960? An association spokesman made this observation: "1960 should be a banner year, provided that the steel strike doesn't start up again." Further, it was noted, the first few months may record an all-time high. Projection of this estimate would indicate a total production in 1960 of more than 10,750,000 tons (about 9,400,000 tons in open-market) to surpass the industry's former peak.

A rise in the capacity-demand ratio is expected to intensify competition, and accelerate the trend toward larger kilns, greater mechanization, and increased fuel efficiency.

Tonnages Since 1954 for Several Major Nonmetallics



(Developed from U.S. Bureau of Mines statistics)

Gypsum **A gain of 20 percent** in domestic crude production in the 1959 January-June period, compared with the same period of 1958, was recorded by the gypsum industry. Imports were also up, to the extent of 51 percent.

As reported to the Bureau of Mines, crude output during the first six months of last year amounted to 5,161,410 tons. Apparent supply, based on the gains in both domestic mining and imports, was up by 29 percent to nearly 7,900,000 tons.

Our estimate last year of final production figures for 1958 were borne out. At 9,600,000 tons, the industry was 10 percent under its 1955 high, and 4 percent above the preceding year. Calcined gypsum production was also up by 4 percent, and totalled nearly 8,125,000 tons.

The steady gains realized for the first six months of 1959, in which only two categories of the many uses of gypsum showed a decline, lend support to the probability that crude output for the full year will exceed 10,000,000 tons. In the last year, housing starts were approximately 8 percent higher, and should find an accompanying increase in gypsum statistics.

In substantiation of the above, lath and wallboard (the two largest categories in building use) continued the upward swing initiated about 18 months ago, and were 14 and 30 percent higher, respectively, than for the same period a year ago.

Portland cement retarder, the second-highest category overall, was also up 25 percent. However, this trend may be expected to level off in view of the condition of stocks and shipments in the portland cement industry during the last four months.

The relatively high levels of 1959 may be expected to continue in the coming months, since the construction picture is expected to remain approximately the same in total. In qualification of the latter

opinion, it should be noted that new housing starts have been estimated at a somewhat lower rate than during the past year, while heavier construction may gain.

Fluorspar On an overall basis, shipments of finished fluorspar for 1958 were recorded about as anticipated at this time last year. Despite a favorable rate during the first six months, the final figure showed a drop of a little less than 3 percent from the preceding year. However, at 319,000 tons, shipments were at the third-highest level of the last ten years, and only 3 percent below the 1956 high.

While shipments for acid consumption rose by a small amount, those for metallurgical use dropped. It had been expected that both would decrease to some extent.

At the end of 1958, the ratio of stocks to consumption was virtually the same as that of the preceding year. Consumption, however, was down by 23 percent.

A significant drop in imports for consumption was recorded. At 392,000 tons, these were 23 percent more than domestic shipments, but in 1957 they were 95 percent higher. The bulk of imports were from Mexico. Domestically, the largest producing state was Illinois.

Phosphate **Both production and sales were up** for phosphate in 1958, according to the latest Bureau of Mines figures. Marketable production, which had dropped during the preceding year, rose to 14,879,000 long tons (4,668,000 long tons P_2O_5 content), and sales gained about 1 percent to a new high of 14,700,000 long tons with a P_2O_5 content of 4,606,000 tons.

A new record was also set in consumption, which was up 4 percent (to 12,128,000 long tons) from the preceding year. Of this amount over 60 percent was utilized in agricultural applications.

As pointed out here last year, the expected normal growth pattern for the industry makes itself evident in the absence of such factors as the prolonged Florida strike, and subsequent protracted efforts to re-establish stocks.

A view of a mainline conveyor haulage installation in the underground workings of the Potash Company of America near Carlsbad, N. M. The entire system involves more than 7 miles of belt conveyor.

Potash **Sales up, production down** — industry producers reported for 1958. Consumption was also up, and the drop in production was only 5 percent from the peak recorded in 1957. Thus, this nonmetallic continues its regular pace—one of the most steady of all the materials reviewed here.

About 3,600,000 tons of potassium salts (2,140,000 tons K_2O equivalent) were produced during 1958, and sales amounted to nearly 4,000,000 tons, for a gain of about 9 percent. Consumption was up by a similar gain to 3,846,000 tons. Producers' stocks were reported at 371,000 tons (K_2O equivalent), or 34 percent less than at the previous year end.

Although exports rose by 9 percent, imports showed a gain of 18 percent. The latter was a particularly sharp rise, compared with the 1 percent increase indicated in 1957.

Sulfur Based on final Bureau of Mines data for 1958, it appears that domestic production of all types of sulfur dropped to the lowest point of the last five years. At a little more than 6,100,000 tons, production was about equal to the 1949-53 average compiled by the Bureau. Of this amount, 75 percent (4,600,000 tons) was Fraasch sulfur.

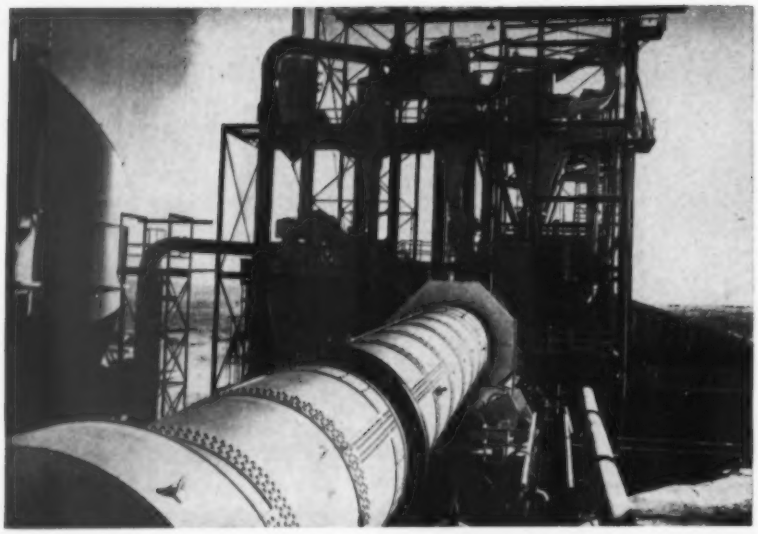
Among the major consuming industries, steel played a major role as it did in the case of several other nonmetallics, and the slackened activity of 1957-58 was not offset by the greater market demand about a year ago.

Paralleling the trend of some other commodities, imports of sulfur and pyrites rose by more than 13 percent. However, exports also held their own, and were a few hundred thousand tons above the volume in the preceding year.

Feldspar **Although a drop of 6 percent** was registered in production of crude feldspar during 1958, the industry nevertheless experienced an appreciable reduction in the rate of decline reported in the previous year. This trend was anticipated in last year's review, and reflects the relative general economic stabilization.

An error in the review of 1957 is corrected here—production of crude in 1957, reported as 612,000 long tons, was actually 498,000. The 1958 figure of 470,000 represents the 6 percent decrease.

In contrast to other nonmetallics, imports (principally from Canada)



The calcining phase of Eagle-Picher's diatomaceous earth operation near Lovelock, Nev., has a 9- by 120-ft. kiln.

remained about the same as in the previous year.

Mica Production and consumption of domestic mica in 1958—the latest year of the Bureau of Mines tabulation—remained virtually unchanged. Comparison with the preceding year shows an increase of 1 percent in tonnage (92,800) and 6 percent in value. The Bureau of Mines reports that this increase in quantity was entirely due to sales of scrap and flake mica, while the higher prices of sheet mica accounted for the gain in value.

Consumption of the latter dropped, however, by 14 percent (block and film). Both imports and total exports declined by the same percentage. Of the total muscovite block and film fabricated, 60 percent was used in electronic applications. North Carolina plants accounted for 54 percent of all mica produced.

A recent announcement made by the Bureau of Mines notes that research on synthetic material to be substituted for strategic block and film mica will be emphasized. A large-scale process has already been developed for the production of synthetic mica for use in mica ceramics.

Clays Although dropping 4 percent, in total, from the preceding year, the production of major types of clay during 1958 put a strong brake on the 10 percent rate of decline registered two years ago Total production amounted to nearly 44,000,000 tons.

By type, the following was recorded by the end of 1958: kaolin—up 2 percent in quantity and value; ball clay—down 3 percent tonnagewise, but about the same in value; bentonite — down 11 percent in tonnage; and fire clay—down 18 percent.

Among the major industrial categories using 125,000 tons or more, increases were registered by chemicals (30 percent), insecticides and fungicides (21 percent), lightweight aggregates (19 percent), and paper coating (7 percent). Consumption in portland and other hydraulic cements, and in tiles was also up.

Paper, rubber, refractory, and pottery use were, as for several years, the major consumption categories for kaolin. Paper alone used over 1,200,000 tons, or 57 percent of the total kaolin produced.

Whiteware, the major use for ball clay, dropped 5 percent, which represented the greater portion of the overall decrease in consumption of this material. The 32 percent drop in refractory markets accounted for the greater part of the decrease in fire clay sales.

A new Bureau of Mines research program on super-refractories is slanted toward the space age. It involves a search for materials that can withstand high temperatures and other severe conditions allied with space exploration, nuclear energy, and missile technology. Many promising materials, found in various clays, are under study.

Talc Sharply reversing the drop recorded in the preceding year, talc, soapstone, and pyrophyllite production in 1958 rose 8 percent. Sales, however, remained about at the same level according to Bureau of Mines figures.

At 737,000 tons, production was within a fraction of a percent of the record high reached in 1956. Imports also increased, and exports were reported at an all-time high of 59,000 tons.

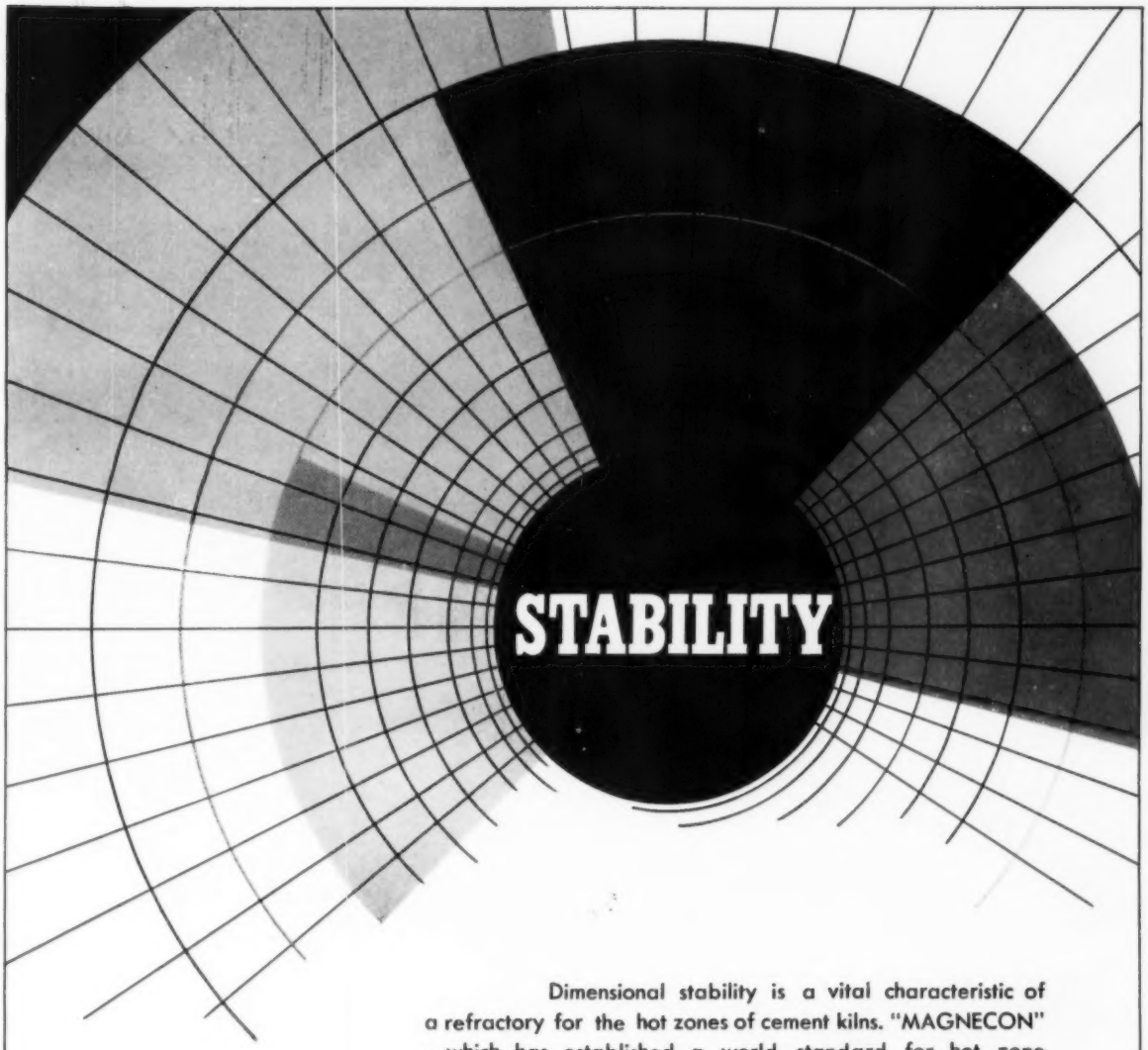
About 80 percent of the talc and soapstone produced was consumed in the ceramic, paint, insecticide, roofing, rubber, and paper industries —somewhat less than in 1957. A gain of 8 percent was noted in the use of pyrophyllite in ceramics and insecticides.

New York, California, and North Carolina ranked in that order in terms of production.

Boron Development of the high-energy fuel program backdropped the 17 percent jump in production and sales of boron minerals and compounds registered in 1958. This field is a potentially high consumer, as noted by Bureau of Mines analysts.

The 528,000 tons produced represented a B_2O_3 content of 265,600 tons, and was valued at $38,300,000. Due to a revision of the 1957 figures, the gain reported here a year ago was in error. However, the reversal of the decline from the 1955 high (B_2O_3) did take place, and at the figure noted above, is about 8 percent under that peak.

Graphite By the end of 1958, graphite had recorded a substantial slide in production as compared with the preceding year. Consumption dropped even further, and at about 29,000 tons was down 30 percent from 1957. Reduced consumption in foundry facings, steel, lubricants, and crucibles accounted for 96 percent of the drop.



Dimensional stability is a vital characteristic of a refractory for the hot zones of cement kilns. "MAGNECON" —which has established a world standard for hot zone liners—has very high dimensional stability. "MAGNECON" was the refractory selected for seven of the largest cement kilns in the world, all newly completed or still a-building:

Miron Freres, Montreal, Que.
Kiln 550′ x 15′ diameter

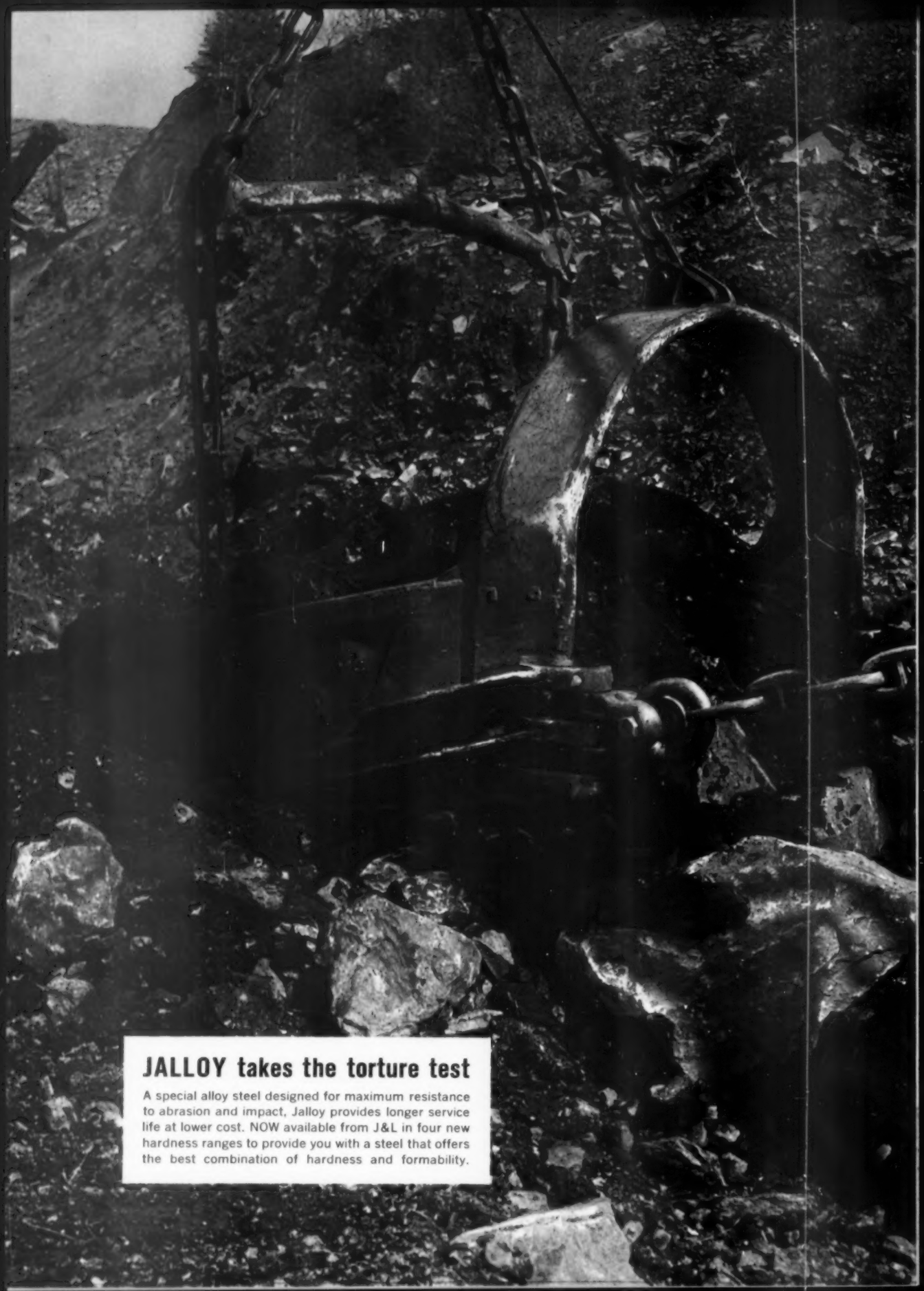
Ciments d'Obourg, Obourg, Belgium
Kiln 525′ x 15′ 7″ diameter
Kiln 525′ x 14′ 7″ diameter

Dundee Cement Co., Dundee, Michigan
2 kilns 460′ x 16′ 6″—15′ —16′ 6″ diameter

Ciments Liegeois, Harcourt, Belgium
Kiln 475′ x 13′ diameter
Kiln 510′ x 14′ 5″ diameter

CANADIAN REFRACTORIES LIMITED
CANADA CEMENT BUILDING, MONTREAL, CANADA

1908

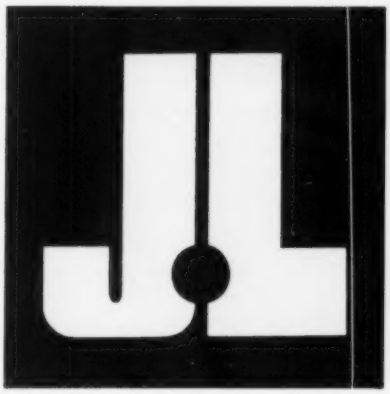


JALLOY takes the torture test

A special alloy steel designed for maximum resistance to abrasion and impact, Jalloy provides longer service life at lower cost. NOW available from J&L in four new hardness ranges to provide you with a steel that offers the best combination of hardness and formability.

Jalloy is tougher, by three to four times, than the ordinary mild carbon steel used in conventional buckets—two to four times as resistant to atmospheric corrosion.

Jalloy is readily flame cut, easy to weld. It provides longer wear and less repair.



Jalloy is produced in four new hardness ranges to provide the flexibility to meet various needs. All four are used in this bucket.

Jalloy plates measuring 6′ x 20′ are cold formed to a 96-inch radius for this mammoth 9-yard dragline bucket.

Recent field tests show Sullivan Trail buckets are stronger, lighter, longer-lasting by at least 30% because . . .

bucket arches & skids & backs & bottoms & bucket jaws are all J&L JALLOY steel

Rugged strip mining operations in the anthracite coal fields around Wilkes-Barre, Pa., demand rugged dragline buckets.

A mining expert with the Sullivan Trail Manufacturing Company, West Pittston, Pa., says:

"Frequent and major repair work on conventional buckets pointed up the need for a bucket that would last longer and have greater strength with less weight."

Design of a new super-bucket began nearly five years ago with the selection of a special heat-treated alloy steel—JALLOY—for bucket areas subjected to severe stress, strain, impact and abrasion. Since then the Jalloy bucket has undergone severe field testing which indicates a 30 per cent longer life.

Recently, through close coordination with J&L's Technical Service Department, Sullivan Trail has saved money and simplified fabrication of the new bucket. By introducing a variation in heat-treatments, J&L developed a new series of *four* Jalloy hardness ranges. Each provides a different combination of formability and resistance to impact and abrasion. The Sullivan Trail bucket now employs all four Jalloy ranges.

If you have a similar problem, Jalloy is your answer. Contact your nearest distributor or J&L district office and ask about Jalloy. Or, write directly to Jones & Laughlin Steel Corporation, 3 Gateway Center, Pittsburgh 30, Pennsylvania, for the new booklet entitled *Jalloy*.

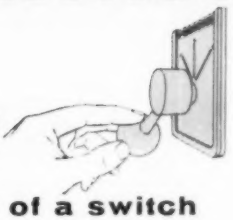
Jones & Laughlin Steel Corporation

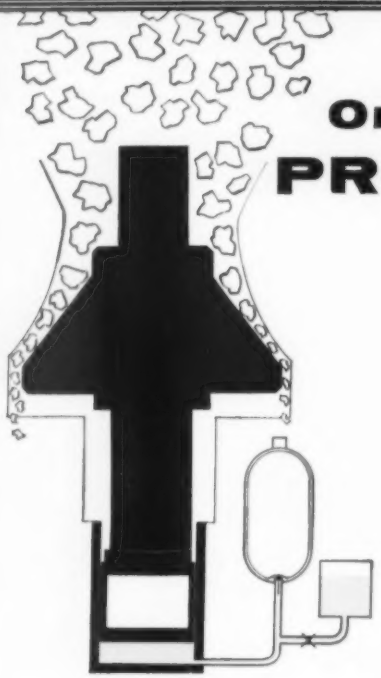
PITTSBURGH, PENNSYLVANIA

The only crusher that provides

One-Man, One-Minute PRODUCT CONTROL

GET ANY CRUSHER SETTING at the flip of a switch





It's Hydraulic

Cone is supported on a hydraulic jack. Crusher setting is controlled by the amount of oil in the jack. A flip of a control switch, conveniently located, positions the cone at any setting.

Adjustment to product size . . . compensation for wear . . . emergency unloading — all are one-man, one-minute operations — all are accomplished with a flip of a switch in the *Hydrocone* crusher. Compare this speed and simplicity with the time-consuming inconvenience of any other method of changing crusher setting—in any other gyratory type crusher. You'll discover that the *Hydrocone* crusher can actually add production hours to your day . . . can give you increased tonnage and greater profits by eliminating excessive downtime.

New Bulletin Available

Bulletin 07B7145C tells the complete *Hydrocone* crusher story. Get your copy from your nearby A-C representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wis.

Hydrocone is an Allis-Chalmers trademark.

Hydrocone CRUSHER

A-C ALLIS-CHALMERS

ALLIS-CHALMERS

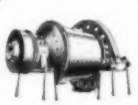
A-5261

Hammermill

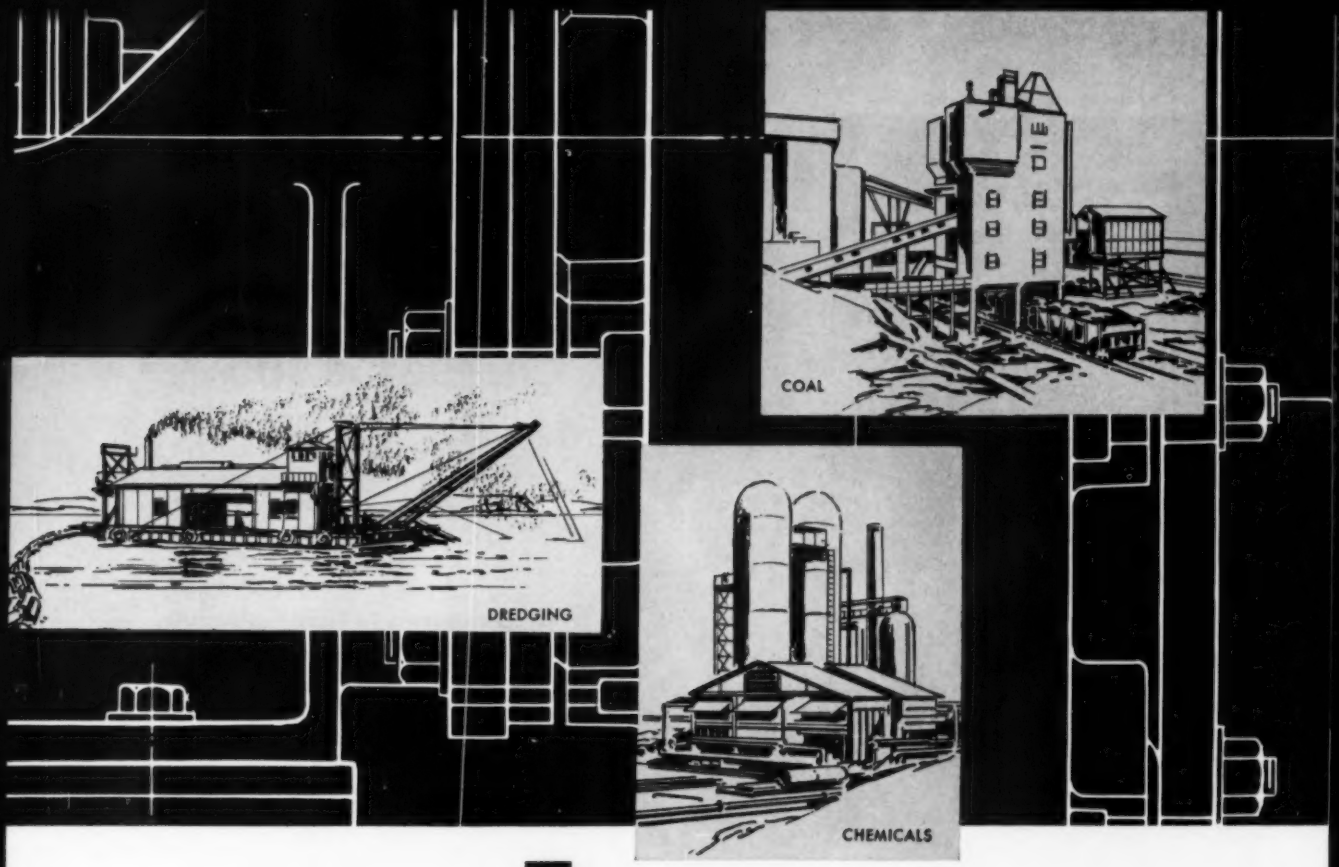
Vibrating Screen

Jaw Crusher

Gyratory Crusher

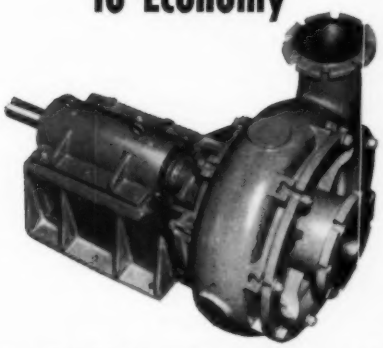

Grinding Mill

Kiln, Cooler, Dryer



MORRIS
CENTRIFUGAL PUMPS

Wherever Sustained Pumping Performance is the Key to Economy



Type CK Solids Pump. A heavy duty, low speed solids pump with extra wide clearance, designed especially to handle fluids containing random size solids and heavily abrasive materials.

If you are pumping solids at any consistency that is fluid, there is a Morris Pump that will do the job dependably and economically.

Because they are often located in inaccessible areas where service needs must be few and far between, Morris pumps are designed to operate at highest efficiency, *constantly*. Morris pump reliability is based on quality features developed during 95 years of hydraulic design and testing experience.

Field testing has evolved the most exacting engineering of component parts . . . the correct selection, forming and machining of just the right alloys for each application . . . and pumps that are rugged, long-wearing and trouble free. Every part of every Morris Pump is accessible for fast, routine service—holding preventive maintenance to a minimum.

Let the qualified Morris Representative in your area help you select the right Pump for your job. Representatives in principal cities or write direct.

MORRIS MACHINE WORKS
Baldwinsville, N.Y.

SALES OFFICES IN PRINCIPAL CITIES
EXPORT OFFICE: 50 CHURCH ST., NEW YORK 7, N. Y.

TDM Self-Propelled Carrier has U-Bar construction which permits drilling true vertical holes on rugged terrain. Wide crawler pads and long ground contact give exceptional stability.

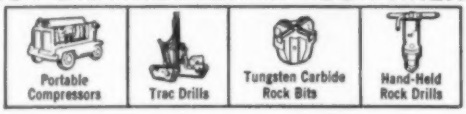
THE JOY 450 DUAL ROTATION DRILL

The new Joy 450 Dual Rotation Drill mounted on the sturdy Joy TDM self-propelled carrier is the modern way to mass produce blast holes economically. The 450-DR drill is the newest and fastest thing in percussion drills. A powerful air motor, geared to the chuck, gives hammer-free rotation for steel changing, and assists rifle bar rotation when the drilling gets tough. It can bottom holes that other drills can't finish—and save you money.

U-Bar feed mounting on the TDM carrier provides the most stable arrangement possible for productive drilling, and is versatile enough to drill holes at practically any angle. Fast tramming and instant response to the completely automatic controls enable the TDM to move quickly, and set up fast.

Among 4½" bore machines, the TDM mounted 450-DR drill is unbeatable in speed, power, and maneuverability. Competitive tests have proven it. For complete information, write for Bulletin 1018-26.

JOY CONSTRUCTION EQUIPMENT IS SOLD AND SERVICED BY THE JOY DISTRIBUTOR IN YOUR AREA



JOY

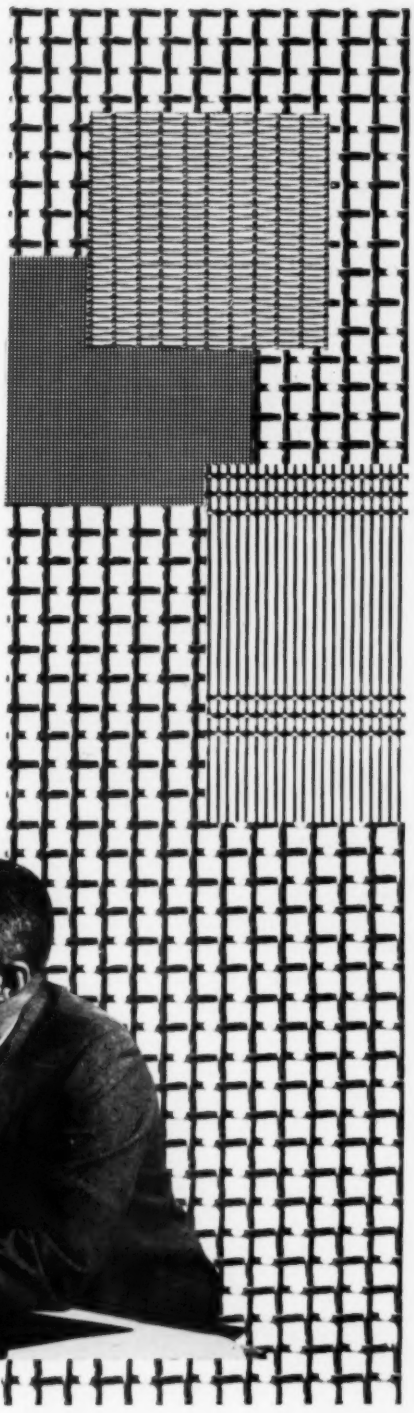
Joy Manufacturing Company
Oliver Building, Pittsburgh 22, Pa.
In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario

TYLER service offers 53,000 ways to cut screening costs

To meet all the different requirements for sizing, grading, and separating materials, W. S. Tyler has developed wire cloth in innumerable types, sizes, metals, meshes, and designs. Today, over 53,000 different specifications are available.

Matching the *right* wire cloth to your specific needs is the service provided by your Tyler sales engineer. From Tyler's unequalled range of product he has the know-how and experience to give you results.

That's *Tyler Screening Service*—use it to cut your production costs.



WOVEN WIRE SCREENS • SCREENING MACHINERY • TESTING SIEVE EQUIPMENT

TYLER

The W. S. TYLER Company • *Cleveland 14, Ohio*

OFFICES: New York • Chicago • Boston • Philadelphia • Atlanta
Dallas • Los Angeles • San Francisco • Baltimore • Birmingham • Houston • Minneapolis
Pittsburgh • Salt Lake City • The W. S. Tyler Company of Canada, Limited,
St. Catharines, Ontario • OFFICE: Montreal

PAYLOADER®

SON — Ray Wertz' current "PAYLOADER" is this Model H-70.

William Wertz and his son, Ray are friendly competitors in the sand and gravel business.

There's one thing they always agree on — it pays to use a "PAYLOADER"!

LIKE FATHER LIKE SON

For 45 years the name of William Wertz of Wilmot, Wisconsin has meant "Sand and Gravel" in Kenosha County. And for the last fifteen years "PAYLOADER" tractor-shovels have been a continuous part of the Wertz operations. His first unit — a Model HL — was used for ten years. "That's the machine you couldn't break", he says.

Ray Wertz, the son, was in partnership with his father but is now well established with his own sand and gravel business at nearby Bassett. Like his father, Ray is a proven-in-the-pit "PAYLOADER" man. He says, "I learned about 'Hough's' while with my father, and when I went into business for myself I stuck right with them because I knew what they would do."

"This Model H-70 is my second. It's bigger and faster than the Model HH I had. It feeds the crusher (100 tons per hour), loads trucks in the pit, loads customers trucks and moves material from the crusher to stock pile. The 'PAYLOADER' is engineered as good as is possible to design a machine. It will be a long time before anyone builds a machine to beat it."

Pit and plant operators, like the Wertz family, have been profiting with proven "PAYLOADER" work-ability and dependability for 20 years. Today's complete "PAYLOADER" line — ranging up to 12,000 lb. operating capacity — includes a type and size for every size job.

Your nearby Hough Distributor is ready to serve you with complete parts and service facilities backed by Hough field service personnel.

FATHER — William Wertz — a 45-year-veteran in the sand and gravel business and a "PAYLOADER" owner for 15 years—operating this Model HU in his Wilmot pit.

HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

HOUGH, PAYLOADER, PAYMOVER, PAYLOGGER and PAY are registered trade mark names of The Frank G. Hough Co., Libertyville, Ill.

THE FRANK G. HOUGH CO.
750 Sunnyside Ave., Libertyville, Ill.

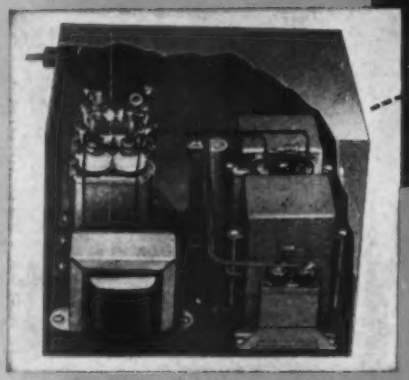
Send data on the complete line of "PAYLOADER" tractor-shovels.

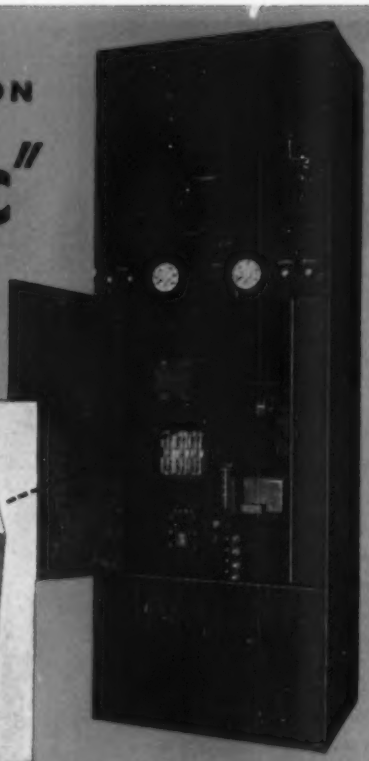
Name.....
Title.....
Company.....
Street.....
City.....State.....

1-B-4

THE WESTERN PRECIPITATION

"Transistomatic" CONTROL





BY FAR, the Industry's Most Advanced Precipitator Control...

NO TUBES! NO RELAYS! NO COUNTERS!

and carries a Lifetime Guarantee!

In the electrostatic precipitation of dust, fume and fly ash, no installation is completely modern without *automatic* control to maintain optimum Precipitator efficiency as the characteristics of the gas stream fluctuate. Compared with manual control, automatic control is not only more sensitive and more efficient, but actually costs less because of the vital savings it makes in labor and operating costs . . . *savings so important that no profit-minded operator will want to be without them.*

But the important point to remember is this—

Although many manufacturers of precipitation equipment offer units for precipitator automation, no other unit is equal to the "Transistomatic" Control for foolproof simplicity, rugged dependability or control accuracy!

These are not idle claims. They can be easily verified by making your own comparison . . .

A DESCRIPTIVE BOOKLET *that gives further information will gladly be sent on request. Write, wire or phone our nearest office!*

Compare **ACCURACY!** The "Transistomatic" does not base its "sensing" action on spark *frequency* alone—or spark *intensity* alone. Instead, it continuously integrates BOTH frequency and intensity to establish an overall "power value" that provides a new standard of control accuracy!

Compare **DEPENDABILITY!** The "Transistomatic" unit contains no parts of any kind requiring regular replacement. Moreover, the entire unit is completely sealed—moisture-proof and watertight.

Compare **GUARANTEES!** The "Transistomatic" is so foolproof and trouble-free it carries a *lifetime guarantee!*

BEFORE YOU BUY ANY automatic precipitator control, be sure to get the complete "Transistomatic" story. A folder is available giving additional data. Or see your nearest Western Precipitation representative for further details!

WESTERN PRECIPITATION CORPORATION

Engineers and Constructors of Equipment for Collection of Suspended Material from Gases . . . and Equipment for the Process Industries

LOS ANGELES 54 • NEW YORK 17 • CHICAGO 2 • PITTSBURGH 22 • ATLANTA 5 • SAN FRANCISCO 4

Representatives in all principal cities

Precipitation Company of Canada Ltd., Dominion Square Bldg., Montreal

VICTOR

for hardfacing **NI-MN RODS** *for build-up* *for attachment*

Victor Ni-Manganese for Build-up is 4½% nickel, 13% manganese alloy, specifically developed for rebuilding manganese steel parts such as bucket teeth and lips; rail frogs and switches; crusher, dredge, pulverizer components. May be used as finish build-up or underbase; forms sound, slag-free welds; high deposition rate and good weldability. Deposits are austenitic with full Hadfield steel properties; nonmagnetic, tough and ductile; stands roughest abuse. Made in 5/32", 3/16" and 1/4" diameters; bare, for manual application by DC, reverse polarity.

Victor Ni-Manganese for Attachment welds crack-free, is specially recommended for difficult joining applications on manganese or carbon steel castings, such as: Dipper teeth and lips; track and drive sprockets; dragline pins and links; rail crossovers, switches and frogs; rolling mill parts; crusher screens, hammers, rolls and mantles; dredge parts. Deposited metal is extremely tough, wears well, has high impact strength. It's a wonderful, low-cost substitute for "stainless" where joining rather than corrosion resistance is chief factor. Made in 1/8", 5/32", 3/16" and 1/4" diameters for manual application by AC or DC, reverse polarity.

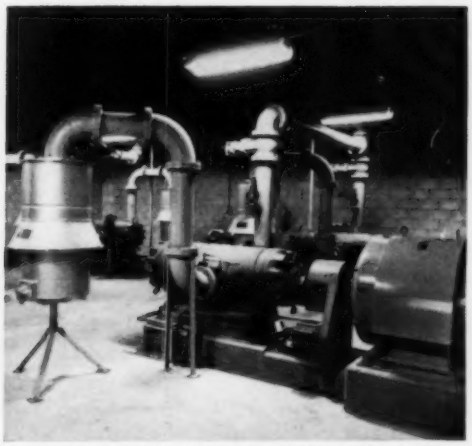
For all your hardfacing or welding needs, call your Victor dealer. Order Victor Ni-Mn rods today.

Profitable dealerships open; inquire now!

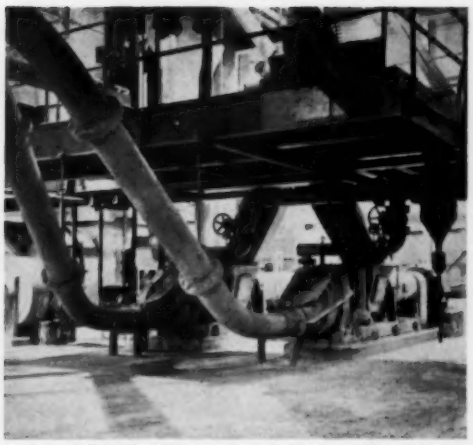
VICTOR EQUIPMENT COMPANY *Alloy Rod & Metal Division* H-65

13808 E. Imperial Highway, Norwalk, California . . . . Wakita, Oklahoma

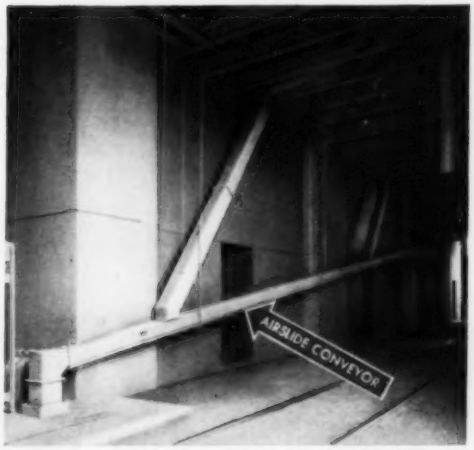
FULLER MATERIALS HANDLING EQUIPMENT HELPS CEMENT PLANT TRIPLE CAPACITY



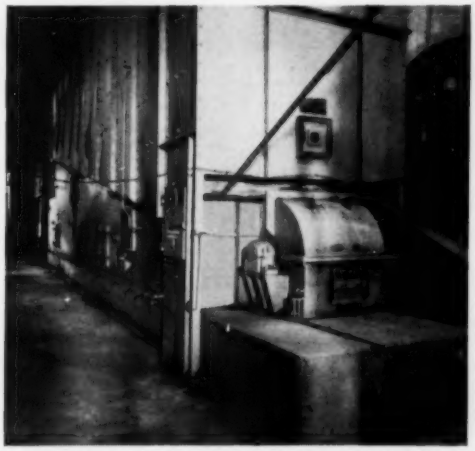
Group of C-300 single stage Fuller rotary compressors furnishing air for the Fuller-Kinyon pumps in raw-finish department.



Two 10″ Fuller-Kinyon pumps in raw mill pumping material to blending silos.



F-H Airslide Conveyor under new finished cement silos feeding to Fuller-Kinyon pump for redistribution.



One of three Fuller Inclined Grate Coolers in kiln building.

Automation with a variety of Fuller equipment at Lehigh Portland Cement Company's Union Bridge, Maryland plant has helped triple capacity from 1,000,000 to 3,000,000 barrels a year.

In this installation, Fuller-Kinyon pumps handle both cement raw material and finished cement to and from process.

Fuller rotary compressors furnish air for both the Fuller-Kinyon pumps and general plant air.

Airslide® Fluidizing Conveyors are used at various stages of both the raw and finished mill operations in feeding both raw material and finished cement to and from process and storage.

Clinker is discharged from three 400′ kilns and cooled to about 145°F. by three Fuller 7′ x 44′ Inclined Grate Coolers.

This wide range of Fuller systems and equipment in the field of pneumatic handling makes it possible for Fuller to find the method of moving dry bulk granular materials best suited to your particular application. Why not write for complete details today? 1324 G-198-T

FULLER COMPANY GENERAL AMERICAN TRADE MARK

FULLER COMPANY

100 Bridge St., Catasauqua, Pa.

Subsidiary of General American Transportation Corporation

Birmingham • Chicago • Kansas City • Los Angeles • New York • San Francisco • Seattle

Fuller

....pioneers in harnessing AIR

HEAVY DUTY
HYDRASTROKE* FEEDER for PLANTS and QUARRIES

Exclusive HYDRAULIC OPERATION

A Reciprocating Feeder easily adapted to feed Screens, Crushers, Belts Trucks, Skips or Railroad cars.

PATENT APPLIED FOR

FEEDER DESIGNED FOR SEVERE SHOCK LOADING

ROCKER MOUNTING OR SUSPENSION
eliminates wear due to friction, needs no lubrication, takes minimum head room.

WIDE RANGE OF SIZES
widths from 36" to 96" feeding capacities from 200 to 7500 tons per hour.

*TRADEMARK

Write for Illustrated Brochures

NICO **NATIONAL IRON COMPANY**

50th Avenue West and Ramsey Street ■ Duluth 7, Minnesota

SUBSIDIARY OF PETTIBONE MULLIKEN CORP., CHICAGO 51, ILLINOIS

Enter 130-A on card, page 241

Negative thinking can cost you 50% more

Don't Scrap Giant Tires When Retreads Do the job at half the Cost

Giant size savings plus new tire mileage are yours when you specify Southern Tire's expert retreading service.

No need to worry over costly downtime, either. Southern Tire trucks pick up your tires after hours and return them quickly to service.

A wide selection of treads include Rock Service • Traction Types • Rib Treads.

All sizes from 1100 x 24 to 33.5 x 33.

TAKE THE POSITIVE APPROACH, CALL COLLECT:

SOUTHERN TIRE COMPANY
1414 Broadway, SHEFFIELD, ALA.
Phone Collect EV 3-2312

Enter 130-B on card, page 241

"FOR PRECISION DRILLING, NO LOST HOLES, WE RELY ON TIMKEN® CARBIDE INSERT BITS"

Special report from Rock of Ages

LOCATION: BARRE, VT.

Operating conditions: dimensional granite quarry

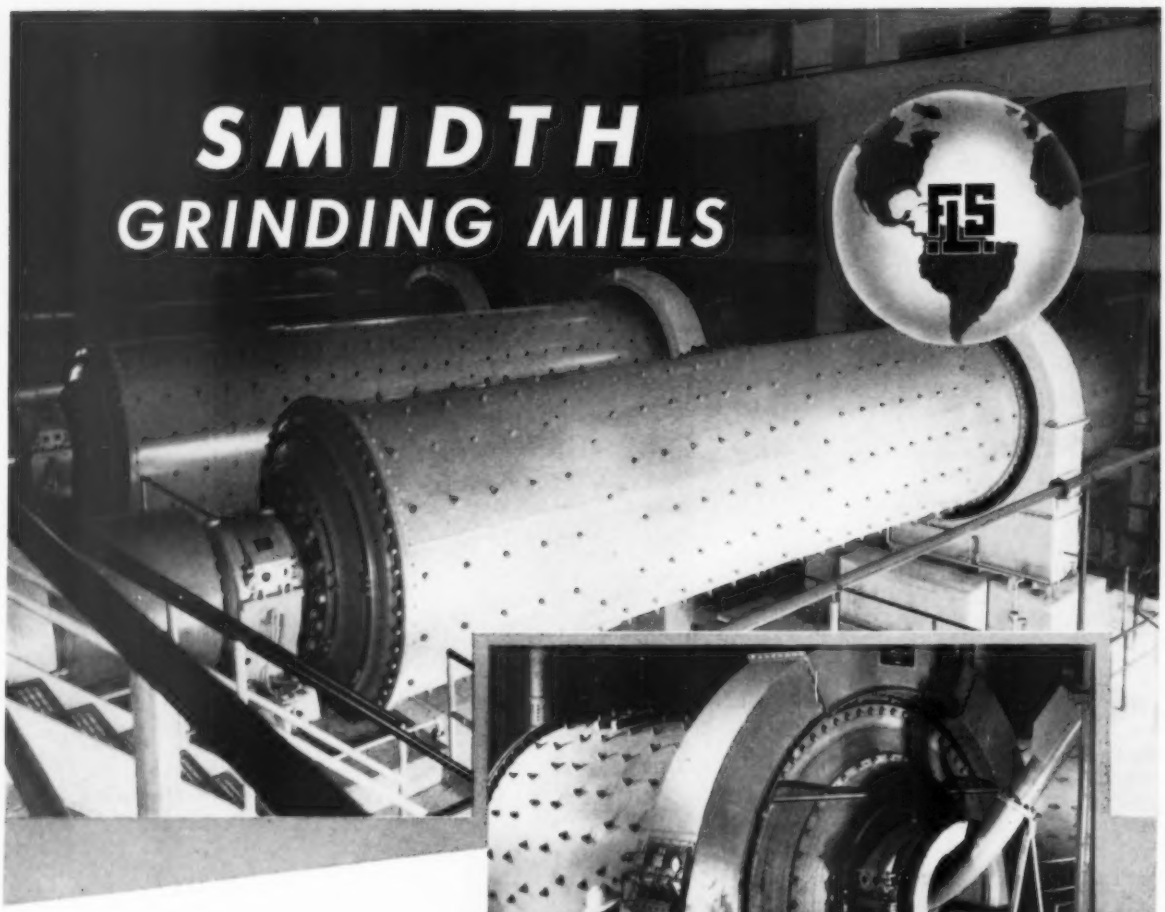
At the world famous Rock of Ages quarry, precision drilling of costly monumental granite is vital. A lost hole could ruin an entire block. "That's why", says Mr. J. Wendell Smith, Rock of Ages Corp. Vice President in Charge of Quarries, "we use Timken® carbide insert bits. They're perfect for our line drilling. We get clean cuts—no lost holes. And with over 50 drills operating, use of Timken carbide insert bits is an important savings factor in our cost control program."

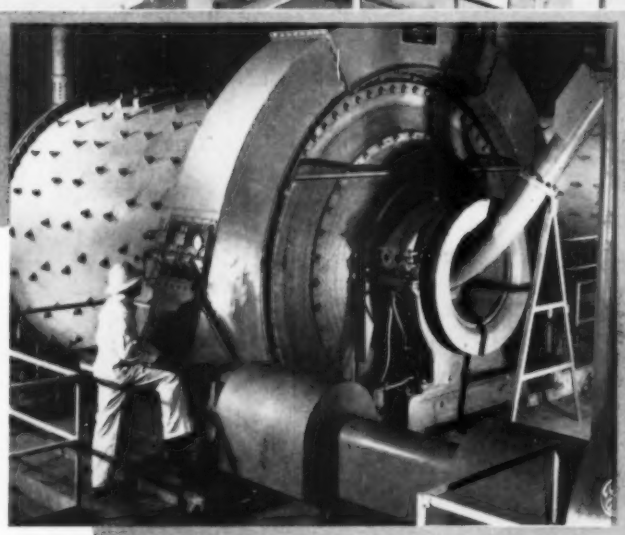
Which Timken bit should you use?

You get greatest economy in hard, abrasive ground with the Timken carbide insert bit. In softer ground, use the Timken all steel multi-use bit. They're interchangeable in the same thread series; you can switch bits when the ground changes. Bit bodies are made of Timken electric furnace fine alloy steel. Let us help you select the right Timken bit for your job. The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable: "TIMROSCO". *Makers of Tapered Roller Bearings, Fine Alloy Steels and Removable Rock Bits.*

TIMKEN®
removable rock bits

SMIDTH
GRINDING MILLS





Ball Mills and multi-compartment Unidan Mills for wet and dry, open and closed circuit grinding and airswept Tirax Mills for simultaneous drying and grinding.

Special features include the Smidth slide shoe bearing and the Symetro Drive.

Upper photo: Unidan Mills, Symetro driven, with one slide shoe and one trunnion bearing.
Lower photo: Gear driven Ball Mill.

F. L. Smidth & Co., A/S
77 Vigerslev Alle
Copenhagen, Denmark

F. L. Smidth & Co.
INCORPORATED
11 West 42nd Street
New York 36, N. Y.

F. L. Smidth & Co., Ltd.,
105, Piccadilly,
London, W. 1, England

F. L. Smidth & Cie France
80 Rue Taitbout
Paris (9e) France

F. L. Smidth & Co. of Canada, Ltd.
11 West 42nd Street
New York 36, N. Y.

F. L. Smidth & Co. (Bombay) Private Ltd.
42 Queen's Road
Bombay, India

World's Longest Quarry Shovel Boom

This is a picture of the solution for an unusual problem—involving a 160-foot boom, the world's largest on a quarry shovel.

A "special," it typifies Marion's ability and willingness to go to unusual lengths to solve customer problems.

The machine is a Marion 5323 which carries an 11-yard dipper, 95-foot handle and 160-foot boom to deal with a rocky bank ranging up to 135 feet in height. This machine's ability to dump 326 feet away from the wall made it the ideal answer to this big quarry's problem.

Why not let Marion specialists take an imaginative look at your quarrying and mining needs?

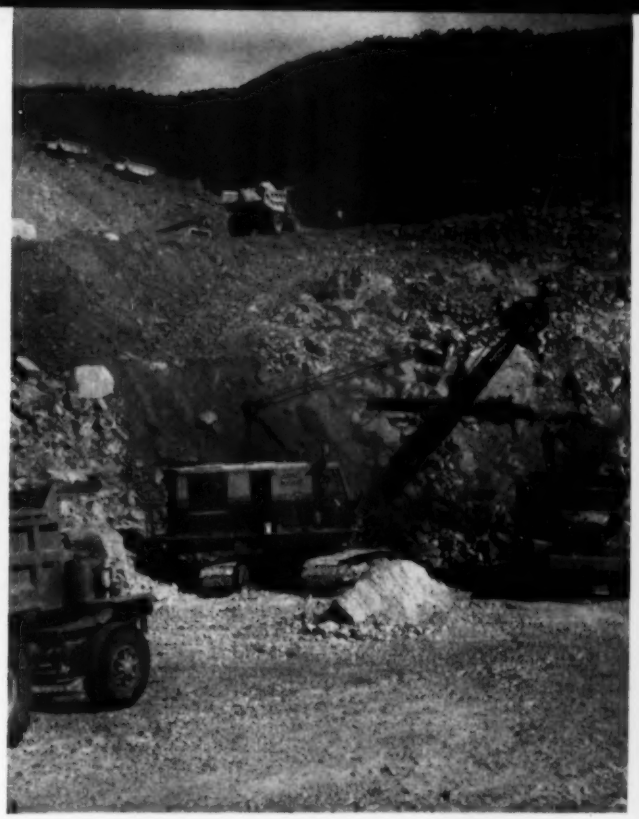
CONSULT **MARION** MINING SPECIALISTS
for lowest costs on your property!

MARION POWER SHOVEL COMPANY • Marion, Ohio, U.S.A.

A Division of Universal Marion Corporation

Thousands upon thousands of tons of rock were dumped along the base of the earthquake-made dam to form a "stilling basin." Here a Mack LVX dumper adds its load of rock to the river bed.

Crossing and recrossing parts of the trapped Madison River with loads of rock fill—all in a day's work for F & S Contracting Co. and the twenty-odd Mack dumpers assigned to the job.



From the base of one of the huge rock slides these Macks worked back and forth to the river bed on a round-the-clock schedule. F & S Contracting Company of Butte, Montana, owns and operates the big trucks.

Tremendous trucking job is aftermath of

The day the mountain fell

When a devastating earthquake shook a Montana mountainside into the Madison River, it created an earth-moving problem of staggering proportions. The river, trapped behind the huge rockslide, had to be quickly released to prevent disastrous floods. Heavy equipment from surrounding areas was mobilized. In a matter of hours emergency roads had been cut through to the remote quake site, and a crash clearance program was under way.

Among the first to get equipment through to the disaster area were crews from F & S Contracting Co., Butte, Montana, with a fleet of heavy-duty Mack dumpers. Day and night on a 24-hour-a-day basis, F & S, veteran of many tough jobs, hustled its Macks through axle-deep mud and water, up almost insurmountable grades and over jagged rock surfaces. Thousands of tons of rock were moved, and F & S reports the Mack trucks detailed to this back-breaking job took it all in stride.

Really tough assignments like this offer indisputable proof of the matchless stamina and dependability built into every Mack vehicle. Unusual or routine, Macks can always be depended on to handle the job efficiently and economically. There's a Mack branch or distributor in your area who will be glad to help you select the model designed to handle *your* important hauling jobs. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd., Toronto, Ont.

7391

MACK
FIRST NAME FOR
TRUCKS

Enter 134 on card, page 241

For extra high strength wire rope...
use CF&I-Wickwire *Double Gray*

The CF&I Image reflects CF&I's experience as a producer of many steel products and CF&I's versatility in developing new products to meet exacting requirements . . . like Wickwire Double Gray*.

The special steel used in Double Gray provides extra resistance to the deforming effects of peening and crushing which occur on the drums and sheaves of heavy equipment. Double Gray also gives extra resistance to abrasion.

Because of these superior qualities, Double Gray rope quickly repays its slightly higher initial cost in safer, more economical operations. Use it wherever extra high strength wire rope is required.

For a free copy of our Double Gray booklet, write to: Advertising Department, The Colorado Fuel and Iron Corporation, 575 Madison Avenue, New York 22, N. Y.

**Wickwire Double Gray Wire Rope is made of extra-improved plow steel. Fortified by an independent wire rope core of the same extra high strength steel, Double Gray rope has a 15% higher breaking strength than the catalog breaking strength of an improved plow steel rope with IWRC.*

WICKWIRE ROPE

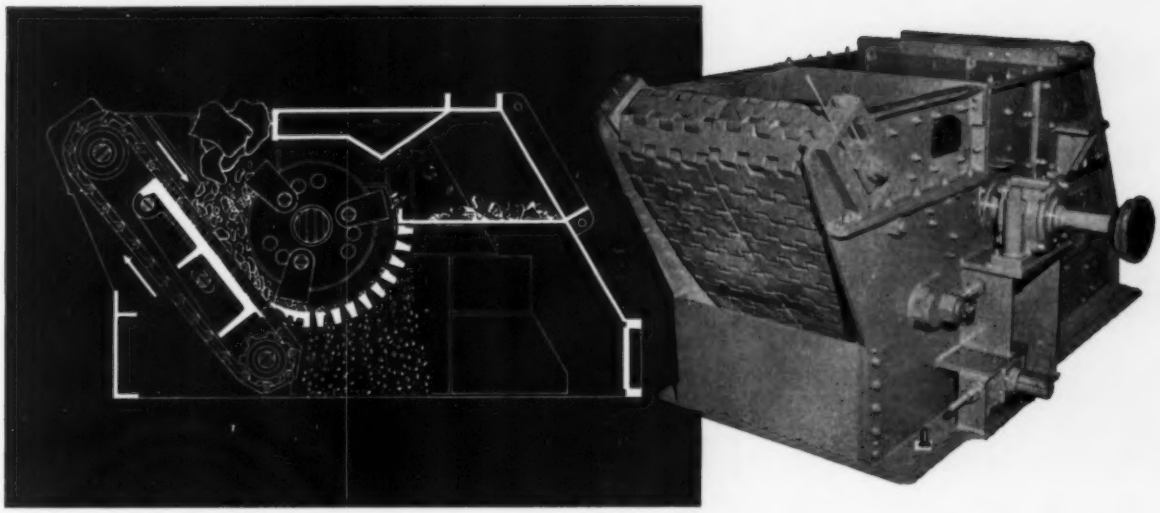
THE COLORADO FUEL AND IRON CORPORATION

In the West: **THE COLORADO FUEL AND IRON CORPORATION**—Albuquerque · Amarillo · Billings · Boise · Butte Denver · El Paso · Farmington (N.M.) · Fort Worth · Houston · Kansas City · Lincoln · Los Angeles · Oakland · Odessa (Tex.) Oklahoma City · Phoenix · Portland · Pueblo · Salt Lake City · San Francisco · San Leandro · Seattle · Spokane · Tulsa · Wichita

In the East: **WICKWIRE SPENCER STEEL DIVISION**—Boston · Buffalo · Chattanooga · Chicago · Detroit · Emlenton (Pa.) New Orleans · New York · Philadelphia

6632

CF&I STEEL



FOR CRUSHING WET AND STICKY MATERIALS

If you're bothered with plugging and time lost getting the mill clear, here's the crusher that'll do away with your troubles. It's the Pennsylvania Non-Clog Hammermill. When in operation the traveling breaker plate carries the feed into the path of the hammers at a fixed rate of speed, making it impossible for the sticky feed to build up on the breaker plate out of reach of the hammers. In extreme wet feed conditions, where frequent clean-outs in the rear of the crusher may be necessary, the Non-Clog can be equipped with a self cleaning device. For complete information on the Pennsylvania Non-Clog Hammermill, send for bulletin 1052. Pennsylvania Crusher Division, Bath Iron Works Corporation, West Chester, Pennsylvania.

Pennsylvania
CRUSHERS

interstate highway demands lead to addition of crushed stone processing as alternate flow

Vermont Gravel Plant Altered For Dual-Purpose Production

ANOTHER ON THE SPOT REPORT

RESOURCEFULness is a quality not usually required of aggregates producers in areas where there is little variation in either raw materials or the finished products in demand. In other areas, adaptability to changing conditions and demands is necessary for survival.

No better example has ever come to our attention than that furnished by the Brattleboro Sand & Gravel Company, Inc., of Brattleboro, Vt. This company in 1948 started up a 30 t.p.h. sand and gravel plant, and over the years gradually modernized and expanded it to a capacity of 60 t.p.h. Then in 1958 the state changed its specifications to require 100 percent crushed stone aggregate for the Interstate Highway System.

In order to get this business, it was decided to alter the plant so that it could also produce crushed stone. The fact that the gravel deposit was also running out of good large gravel for crushing, and the availability of a good stone deposit also influenced this decision.

The changes made increased the sand-and-gravel producing capacity of the plant to over 100 t.p.h., and

By WALTER E. TRAUFFER

the crushed stone capacity to 80 to 90 t.p.h. Early in October the company finished a contract for 21,000 tons of crushed stone—in the form of 18,000 cu. yd. of concrete from its ready-mix plant—for a local interstate highway project. The plant then switched to sand and gravel production for another job. Operations will be switched from one product to the other as demand requires, even on successive days, but the two will not be processed simultaneously.

The original 30 t.p.h. sand and gravel plant built in 1948 was supplemented in 1950 by a 1-cu. yd. ready-mix plant with two small truck-mixers. This used up much of the material produced incidental to the large local demand for ¾-in. roadstone. The first major expansion program, in 1952, doubled capacity to 60 t.p.h. and greatly increased the plant's flexibility and efficiency. Equipment installed then included a jaw primary crusher with a vibrating grizzly feeder, a gyratory secondary crusher, and a vibrating screen to replace the original rotary screen.

The latest program, completed in 1958, included the installation of a larger jaw crusher with a vibrating grizzly feeder ahead of the smaller jaw crusher. This is only used when crushed stone is produced, the

A closeup of the crusher arrangement with the new 24- by 36-in. crushed stone primary (right) and the old primary (left).

This view of the Brattleboro Sand & Gravel Company's plant shows a truck dumping quarried stone to the new primary crusher (left). The primary crusher for sand and gravel (right) serves as a secondary for the crushed stone.

smaller crusher acting as a secondary unit. For sand and gravel production, the older crusher is still used as the primary. Other equipment installed included a larger gyratory reduction crusher with the old vibrating screen as a scalper, and a 3-deck screen for final sizing. A larger screw washer has just replaced the old smaller unit.

The ready-mix plant had also been improved over the years. Just after it had been changed over to bulk cement early in 1957, it was destroyed by fire. It was replaced by a C. S. Johnson plant with a 120-cu. yd. bin, a 2-cu. yd. batcher, etc. The capacities of the six units in the truck-mixer fleet range from 4 to 7 cu. yd.

The quarry is located in a deposit of Vernon blue granite 1½ miles south of the plant. This rock is light in color and hard—3½ percent by the Deval wear test. Drilling, blasting, loading, and delivery to the plant hopper are done by a contractor, Wesley Smith of Rochester, Vt. A wagon drill is used, and trucks are loaded with a 22B Bucyrus-Erie shovel.

The stone is discharged to the new crushing setup, a 3- by 12-ft. Simplicity vibrating grizzly feeder with 5-in. openings preceding the No. 2436 New England jaw primary crusher. The latter is driven by a 100-hp. motor through V-belts to a flat pulley on the crusher. A Lodestar hoist operates a stone hook for handling large rock. Minus 5-in. rock through the grizzly and the crusher is carried on a 30-in. by 75-ft. belt conveyor to the 50-ton hopper over the old jaw crusher installation.

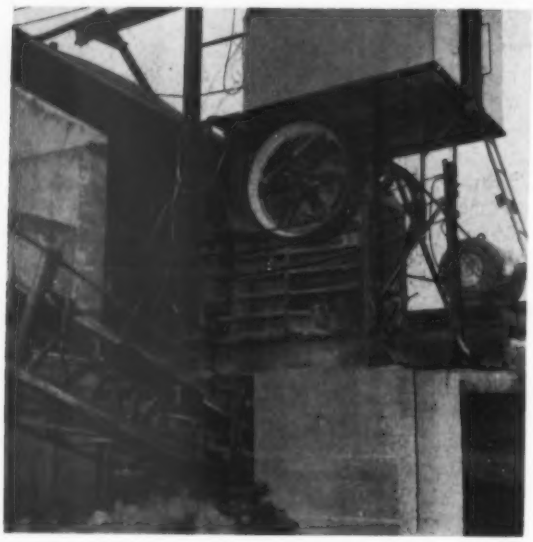
The sand and gravel deposit, of glacial origin, is near the plant, and trucks are loaded by a ½-cu. yd. Bucyrus-Erie shovel. This deposit now averages 50 percent gravel but most of this is small. Trucks dump direct to the above-mentioned 50-ton hopper. Sand and gravel and crushed stone are never processed at the same time but are sometimes alternated on succeeding days.

Under this hopper a 2- by 8-ft. Simplicity vibrating grizzly feeder with 2½-in. spacing feeds to the original No. 1428 New England jaw primary crusher, which is used as a secondary unit for crushed stone. This crusher is driven by a 50-hp. motor.

Minus 2½-in. material through the grizzly and the crusher is carried on a 20-in. by 80-ft. belt conveyor to the old 3- by 8-ft. Simplicity 2-deck vibrating screen now used as a scalper. This unit has 2½- and 1¾-in. wire cloth. Oversize (2½- to 5-in.) goes to the new No. 636 New England gyratory crusher, which is driven by a 75-hp. motor. This crusher is set at 1- to 1½-in. maximum opening, depending on the products desired. An adjustable chute makes it possible to send any desired part of the material over the bottom deck (1¾- to 2½-in. opening) to the old 19S Kennedy-Van Saun gyratory crusher. The latter is set at ½

An oversize piece of rock being removed from the primary crusher by a hoist.

H. A. Bradley and E. A. Felch, partners, standing beside one of their advertising truck mixers.



The new 24- by 36-in. jaw crusher and its vibrating grizzly feeder (left), used only when crushed stone is being produced.

Below: The scalping screen which feeds the two gyratory reduction crushers.

in. in order to make more pea stone, or gravel. The products of both crushers are returned on an 18-in. by 60-ft. conveyor back to the main conveyor in closed circuit.

The remainder of the 1¾- to 2½-in. material over the bottom deck of the scalping screen and the minus 1¾-in. throughs are carried on a 20-in. by 80-ft. belt conveyor to the new 4- by 12-ft. Simplicity 3-deck sizing screen. Openings on this screen are changed as necessary to make desired sizes. Usually, for both sand and gravel and crushed stone production, the top deck has two sections of ⅝- and one of ¾-in. cloth, the second deck has two sections of No. 4 or 3/16-in. and one of 5/16-in., and the bottom deck is all 3/16-in. wire cloth. This screen is equipped with washing sprays which are used for both stone and gravel production. On stone the dust through the bottom deck is in demand for surface treatment.

The three sizes of stone or gravel over the three decks—1½-, ¾-, and 5/16-in.—go into bins for truck loading.

Sand or dust through the bottom deck of this screen flows to the new 24-in. by 25-in. Eagle single-screw washer, and the product of this washer drops into a new 100-ton steel bin.

The New England Road Machinery Company supplied much of the equipment, including crushers, screens, conveyors and bins. Simplicity screens, Hill-Martin screen cloth, and Boston Woven Hose conveyor belting are used.

The Brattleboro Sand & Gravel Co. is a partnership owned by E. A. Felch and H. A. Bradley, president and treasurer, respectively. In addition to their other duties, these men also pinch-hit as truck drivers, repairmen, etc., in emergencies.

Eight men were burned—two fatally—in an unusual accident at the Dewey Portland Cement Company's plant in Dewey, Okla., on October 14. Charles F. Callaway, 56, and Marcelino C. Gutierrez, 62, died of burns. The men were cleaning the openings in a kiln stack base when hot kiln dust fell on them.

Alpha *Automates* Cement Orders

The common language of automation, punched paper tape, has scored another victory in a quiet revolution. Successful in harnessing machinery, computers, and statistical systems, the tape that "talks" to machines is removing the element of human error from interplant and interoffice communication.

ON May 15 of last year Alpha Portland Cement Company officially began using the cement industry's first completely automated sales order processing system. Alpha's setup is also unique in being one of the first order processing systems of its kind in use anywhere in business, linking the company's New York and Boston sales offices with the home office in Easton, Pa., and plants in Martins Creek, Pa., and Catskill, N. Y.

What Does It Do?

Let's say that at 9 a.m. in Boston, Mass., an Alpha customer orders a carload of cement for his construction project. Six minutes later, at 9:06 a.m., a printed duplicate of the original Boston order can be at the Alpha plant from which his cement will be shipped. Of course, few orders need to be handled quite this fast; this is just an example of the capabilities of the system.

Even more important, however, is the elimination of all but a microscopic margin for error. The system cannot make a mistake; but at the start of the system, where the initial order is taken over the telephone, a small possibility of human error does exist. But that is the only possibility. The punched tape does the talking from here on until the shipment of cement rolls out of Alpha's plant.

Compare this system with the conventional ways of handling orders: first, the customer's telephone call or written order; then entering the order on an order form; mailing or telephoning the order to the home office or plant; more paper work and telephone calls here; and eventually the order reaches the plant's shipping department.

That is not all, however. Invoices must still be prepared to cover the order, and eventually this single order must take its place in the mass of statistics which every business firm accumulates.

The possibility of errors is present at nearly every point in this type of system. Errors are almost unavoidable if many hands pass along an order, and errors have a way of causing problems. *(Turn page)*

When a customer phones an order in to a regional sales office, this order is typed up, and a customer order tape is punched. This begins the automated order process.

At Alpha's home office in Easton, Pa., the incoming order tape automatically types out an order form and simultaneously punches an identical order tape, which is then transmitted to the plant.

Key machines of the system are: (1) the transmitter - receiver with the station selector atop it, extreme right; and (2) the machine for typing orders and cutting tapes (center).

The Talking Tape

Here's how Teledata works. At Alpha's Boston office a salesman takes a telephone call from a customer who wants a carload of cement. The salesman writes down this information for a formal sales order. Then the talking tape takes over. From a file a clerk takes a special tape which has been prepunched with all of the standard information about this customer—name, address, routing, shipping instructions, etc.—and inserts this tape into a Friden Flexowriter, along with an order blank.

The Flexowriter, following the instructions of the tape, fills in most of the order blank, stopping automatically so that the operator can type in special information such as quantity, price, and delivery date, when needed. At the same time the Flexowriter punches a new tape, which is called the order tape. The latter is the key element in handling this particular order.

The operator places the order tape in a Friden Teledata receiver-transmitter connected to Alpha's main office in Easton, Pa. This unit sends the stored data of the tape by electrical impulses over telephone wires to Easton. There an identical unit converts the incoming electrical impulses into another punched tape.

This tape, indentical in every way to the tape punched in the Boston office, is placed in another Flexowriter, along with an order form; and as the tape is "read," the order form is filled out automatically.

The next step is a simple one. The order tape is sent through the receiver-transmitter to either Alpha's Catskill or Martins Creek plant. Here again a receiver-transmitter punches out a tape which impulses an order-writing Flexowriter, which also types the bill of lading. Back at the main office, the talking tape is already putting other obedient machines to work.

Automated Invoices

The Boston customer's cement order has gone swiftly to the plant from which it will be shipped, but what about the invoice for the order? There is no need to take off invoice data order by order! The Flexowriter does this automatically.

While Easton office records are printed by the original incoming customer tape, a third machine is simultaneously punching an invoice tape with only that information which is needed to invoice the customer. The original customer tape is coded to impulse the pick-up of this data on the invoice tape.

During a billing period the invoice tape is transmitted to a Friden Computyper, an automatic calculator operating on instructions from the punched invoice tape.

The Computyper, impulsed by the invoice tape, types the order information, stops to permit an operator to enter the actual shipping weight and date of shipment from plant records, then continues to calculate freight charges, line totals, and complete totals.

Finally, on still another tape, the Computyper selects the necessary data for sales analysis and stores it for subsequent conversion to tab cards. Alpha is now planning the installation of a series 50 IBM system, which will take these tab cards and analyze them for statistical information.

Alpha management expects several obvious benefits from the new integrated processing system. Most important, although almost impossible to calculate in terms of dollars and cents, is the assurance of nearly perfect transmission of sales information. Getting the customer's order right the first time and every time thereafter is the major problem all companies try to solve.

However, Alpha looks for sizable savings in paper work, long distance telephoning, duplication of clerical work, and excessive man-hours. The new system promises fulfillment of all these aims.

Monograph on Engineering Offers Vocational Data

Engineering, a booklet containing information designed to aid young persons in making intelligent choices for careers, is the latest in a vocational and professional monograph series issued by the Bellman Publishing Company.

Subjects covered include the history of engineering, work definitions, qualifications needed, education and training, opportunities, earnings, general trends in the field, and a list of accredited engineering schools.

Price, $1 per copy; published by Bellman Publishing Company, P.O. Box 172, Cambridge 38, Mass.

New Insulating Materials Developed by Natl. Gypsum

National Gypsum Company of Buffalo, N. Y., has developed two new products which officials say "could revolutionize the yearly cycle of heavy construction." Thermaform and Thermaslab, made of special insulating materials, are designed to be placed over fresh concrete to permit proper hardening even in extremely cold weather. Thermaform is used for walls, and Thermaslab for floors.

Near Zag, Ky., the new plant of the Licking River Limestone Company recently went into production at the current capacity of 200 t.p.h. This rate reportedly can be increased to 300 t.p.h. if necessary. Operation is pushbutton-controlled.

Raw Shale Found Adaptable For Lightweight Aggregate and Pozzolan

By HARRY F. UTLEY

ANOTHER ON THE SPOT REPORT

EXPANDED shale recently became available as a lightweight aggregate for the concrete industries in the Spokane, Wash., area. Norlite Products Company of Spokane is the supplier, and the product is being processed in a small rotary-kiln plant in suburban Mead, near the aluminum-reduction works of Kaiser Aluminum & Chemical Corporation.

In developing the new industry, the management engaged in considerable exploratory work to locate the grade of volcanic shale necessary for proper bloating in the kiln. At the same time, tests revealed that the chemical and physical characteristics of this raw material were quite identical with those required to produce a high-grade activated pozzolan. Interest in the operation, therefore, lies along the lines of both of these end products.

The various deposits all lie within a 13-mile radius of the plant at Mead. The shale is dug or ripped out, loaded into trucks, and carried to a receiving hopper at the plant. Production of expanded-shale aggregate got under way in 1958, and shipments now are being made to several block makers and a few ready-mix operators in Spokane and vicinity. The first order of large proportions involved 30,000 cu. yd. for the concrete flooring of the recently-opened Maple Street Toll Bridge over the Spokane River.

Primary reduction of the shale is accomplished in a slugger-type hammer mill which breaks the raw shale by impact to about 3-in. size before it is brought down to about 1-in. top-size in a conventional hammer mill. The secondary breaker is in closed circuit with a double-deck vibrating screen. This screen rejects oversize on its upper deck for return to the crushing circuit, passes minus No. 8 fines as throughs to waste, and makes kiln-feed product, which is normally in the minus ¾-in. range.

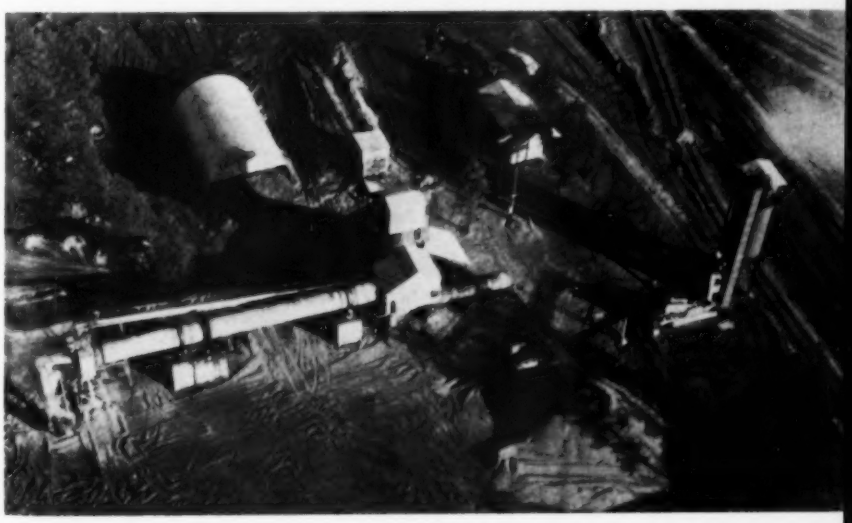
From the kiln-feed bin, the shale is conveyed and fed to the 8½- by 125-ft. rotary kiln, where expansion takes place at the maximum temperature of about 2,100 deg. F. The hot, bloated product then drops to a 40-ft. long rotary cooler for temperature reduction, the cooler discharging directly onto a belt-conveyor which stacks up a storage pile. The kiln gases exhaust through a dry cyclone, where the dust is arrested.

From the storage pile, the aggregate is reclaimed by a tunnel conveyor which transfers to a second conveyor for delivery to a 3-deck screen. Here any oversize lumps are removed and the product sized if and as desired before being elevated to a compartmented loading-out bin.

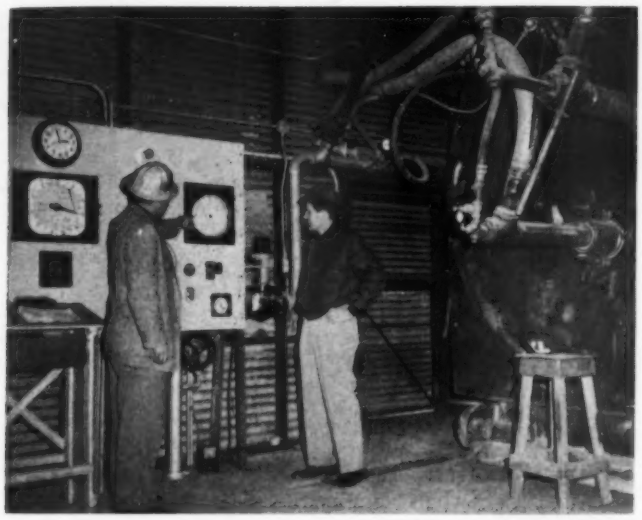
At this stage of the operation all the product is, of course, of the sealed-skin type, and shipments can be made of this straight variety at the option of the customer. Alternatively, oversize may be crushed in still another hammer mill to make an aggregate of the "Haydite type." The storage bin can load trucks directly below it, or cars on a rail spur *via* chute.

Production has been at the rate of about 160 cu. yd. per day although this volume could be increased about 25 percent with the existing equipment if a demand should arise.

While the plant is presently set up for aggregate production, man-



An air view of Norlite's new shale-expanding facility at Mead, Wash., east of Spokane.



The control-instrument panel and firing end of the 8½- by 125-ft. rotary kiln.

Left to right: James K. Johnson, vice-president and general manager; Dick Kavanagh, superintendent; Gil Littell, plant foreman. A part of the plant can be seen in the background.

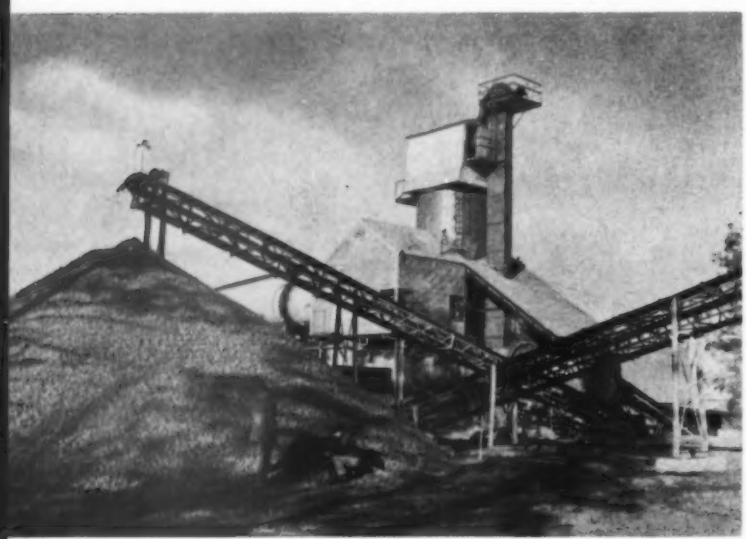
agement is keenly aware of the potential market for pozzolans in concrete, especially in a number of large dams which are planned for the Northwest. Pozzolanic material has been produced experimentally, and it was found that kiln temperatures in the 1,400- to 1,500-deg. range, followed by grinding in a ball mill, can yield a highly-acceptable product.

In the spring of 1959 samples of Norlite pozzolan were supplied to the Corps of Engineers for analysis by Washington Testing Laboratories, in accordance with Corps Spec. CRD-C 262-57. Test samples exceeded requirements in every respect. Strength specifications call for the minimum of 900 p.s.i. at 7 days; the Norlite pozzolan was in the range of 1,123 to 1,375 p.s.i. The specifications allowed the maximum of 12 percent retention on a 325-mesh sieve; the pozzolan under test was in the 6- to 9-percent range. Specific gravity registered 2.60; Blaine specific surface 8,160 to 9,120.

Efforts are being made by the Norlite management to obtain a contract to supply the pozzolan needs of at least one of the big dam jobs coming up, and it could quickly convert the plant from lightweight aggregate to pozzolanic production by adding the necessary grinding equipment, etc.

For example, Glen Canyon Dam, now being built by the Bureau of Reclamation, will require more than 200,000 tons of pozzolan, and Norlite management is hopeful of supplying an order approaching this magnitude in the foreseeable future.

James W. Johnson is president of Norlite, and his son, James K. Johnson, is vice-president and general manager. Dick Kavanagh is the engineer and plant superintendent.



Finished aggregate coming from the rotary cooler is stockpiled over a reclaiming tunnel.

N.S.G.A. Safety Contest Winners Cited in Fifth Annual Event

RESULTS of the 1959 National Sand and Gravel Association safety contest, the fifth conducted by the association, have been recorded. (The contest covers the period from July 1, 1958, to June 30, 1959.)

The winning plant for the second consecutive year in the **Class A** competition (plants producing more than 500,000 tons of sand and gravel during the contest period) is the Irwindale plant of Consolidated Rock Products Company, Los Angeles, Calif., which operated without a single injury during the contest period. The 28 plants entered in the Class A competition had accident-free records.

According to the policy established by the safety committee, the plant with the greatest combined total of tons of sand and gravel produced and man-hours worked receives the highest rating in the case of identical scores. On this basis, the Irwindale plant is the winner of the Class A competition. Certificates of Achievement in Safety will be awarded to the following plants with accident-free records enrolled in the Class A competition:

American Aggregates Corp., Greenville, Ohio—Columbus 2C plant, North Dayton plant, and Symmes plant.

Amico Sand & Gravel Co., Morrisville, Pa.—Riverside, N. J., plant.

Central Texas Gravel Co., Dallas, Tex.—Burt plant.

Concrete Materials & Construction Div., American-Marietta Co., Cedar Rapids, Iowa—Des Moines plant.

Consolidated Rock Products Co., Los Angeles, Calif.—Claremont plant and Hewitt plant.

Eastern Rock Products, Inc., Utica, N. Y.—Boonville plant No. 1 and Barneveld plant No. 2.

Fort Worth Sand & Gravel Co., Fort Worth, Tex.—Fort Worth plant.

Gifford-Hill & Co., Inc., Dallas, Tex.—Hoot plant.

Jahncke Service, Inc., New Orleans, La.—Bluff Creek plant.

Livingston Rock & Gravel Co., Inc., Arcadia, Calif.—Duarte plant and Kincaid plant.

Lyman-Richey Sand & Gravel Corp., Omaha, Nebr.—Cullom plant.

Material Service Corp., Chicago, Ill.—Algonquin plant, Lockport plant, and Morris plant.

Pacific Cement & Aggregates, Inc., San Francisco, Calif.—Centerville plant No. 106 and Kerlinger plant No. 114.

Southwest Construction Materials Co., Dallas, Tex.—Fred plant and John plant.

Texas Construction Material Co., Houston, Tex.—plant No. 23 (formerly Alleyton).

Warner Company, Philadelphia, Pa.—Dredge Franklin plant and Van Sciver plant.

Wesco Materials Corp., Dallas, Tex.—West plant and Witte Gravel Company plant.

Fifty-five plants entered in the **Class B** competition (plants producing between 200,000 and 500,000 tons of sand and gravel during the contest period) had accident-free records. The Kinder plant of Gifford-Hill & Co., Inc., Dallas, Tex., with the greatest combined total of tons of sand and gravel produced and man-hours worked among these accident-free plants, will be awarded the Class B trophy. Certificates of Achievement in Safety will be awarded to the following plants:

Acme Fuel & Material Co., Davenport, Iowa—Muscatine plant.

Alabama Gravel Co., Birmingham, Ala.—Elmore plant.

American Aggregates Corp., Greenville, Ohio—Fort Jefferson plant, Indianapolis 15A (Raymond St.) plant, Indianapolis 15H (Harding St.) plant, Newark plant, Richmond (Ind.) plant, and South Dayton plant.

Becker County Sand & Gravel Co., Cheraw, S. C.—Marion (N. C.) plant.

Chicago Gravel Co., Chicago, Ill.—Hammond plant.

Columbus Gravel Co., Columbus, Miss.—Columbus plant.

Consumers Co., Div. Vulcan Materials Co., Chicago, Ill.—Department 382, South Beloit, Ill., Department 305, Wadsworth, Ill., and Department 307, Hales Corners, Wis.

Dallas Sand & Gravel Co., Inc., Selma, Ala.—Plantersville plant.

Dixie Sand & Gravel Corp., Chattanooga, Tenn.—Chattanooga plant.

Dunning Sand & Gravel Co., Inc., Farmington, Conn.—Farmington plant.

Fountain Sand & Gravel Co., Pueblo, Colo.—Pueblo plant.

Guaranteed Gravel & Sand Co., Mankato, Minn.—Mankato plant.

Hallandale Rock Corp., Ft. Lauderdale, Fla.—Deerfield Rock Corporation plant.

Hartland Sand & Gravel Co., Hartland, Wis.—Hartland plant.

Houdaille Construction Materials, Inc., Morristown, N. J.—Lakewood plant.

Illinois-Wisconsin Sand & Gravel Co., Chicago, Ill.—Chicago plant.

Jefferies & Betts Gravel Co., Fort Worth, Tex.—Belknap plant.

Kanawha Sand Co., Parkersburg, W. Va.—Parkersburg plant.

Edw. Lutz Sand & Gravel Co., Inc., Milwaukee, Wis.—Sussex plant.

Lyman-Richey Sand & Gravel Corp., Omaha, Nebr.—Fremont plant, LaPlatte railroad plant, and LaPlatte truck plant.

Marquette Cement Manufacturing Co., Chicago, Ill.—Memphis (Tenn.) sand plant.

Material Service Corp., Chicago, Ill.—Cayuga plant.

McGrath Sand & Gravel Co., Inc., Lincoln, Ill.—Bloomington plant and Forreston plant.

Memphis Stone & Gravel Co., Memphis, Tenn.—Airways plant and Camden plant.

F. F. Mengel Co., Wisconsin Rapids, Wis.—Custer plant.

Pacific Cement & Aggregates, Inc., San Francisco, Calif.—Lemon Cove plant No. 133 and Yolo plant No. 131.

Pfaff & Smith Builders Supply Co., Charleston, W. Va.—Dredge No. 6 plant.

Service Rock Co., Riverside, Calif.—Colton producing plant.

Shippingport Sand & Gravel Co., Youngstown, Ohio—Shippingport plant.

Southwest Construction Materials Co., Dallas, Tex.—Jere plant.

The Standard Slag Co., Youngstown, Ohio—Massillon plant.

Stewart Sand & Material Co., Kansas City, Mo.—Missouri River plant and Muncie Creek plant.

Utah Sand & Gravel Products Corp., Salt Lake City, Utah—Cottonwood Heights plant and Garfield plant.

Vista Rock Products, Inc., Reno, Nev.—Reno plant.

Vulcan Materials Co., Birmingham, Ala.—Cooks plant and Pratt Junction plant.

Wesco Materials Corp., Dallas, Tex.—Van plant.

Western Indiana Gravel Co., Lafayette, Ind.—Leesburg plant, Montezuma plant, and South Bend plant.

Sixty-four plants entered in the Class C competition (plants producing less than 200,000 tons of sand and gravel during the contest period) had accident-free records. Kaw No. 2 plant of Stewart Sand & Material Co., Kansas City, Mo., will be awarded the Class C trophy for the largest combined total of tons of sand and gravel produced and man-hours worked among these 64 plants. Certificates of Achievement in Safety will be awarded the following plants:

Amico Sand & Gravel Co., Morrisville, Pa.—Morrisville plant and Tulleytown plant.

Arkansas River Sand Co., Tulsa, Okla.—Sand Springs, plant.

The Arundel Corporation, Baltimore, Md.—Masonville plant and Pasadena plant.

Associated Sand & Gravel Co., Everett, Wash.—Everett plant.

Becker County Sand & Gravel Co., Cheraw, S. C.—Cash plant.

Boggess Concrete Materials & Construction Co., Estherville, Iowa—Emmetsburg plant.

Brewer & Brewer Sons, Inc., Chillicothe, Ohio—Chillicothe plant.

The Buffalo Slag Co., Inc., Buffalo, N. Y.—Alfred Station plant A. S. and Franklinville plant F.

Cemstone Products Co., St. Paul, Minn.—Highway 12 plant and Lakeland plant.

Central Builders Supply Co., Sunbury, Pa.—Isle of Que sand plant.

Columbia Sand & Gravel Corp., White Plains, N. Y.—White Plains plant.

Concrete Materials & Construction Div., American-Marietta Co., Cedar Rapids, Iowa—Booneville plant, Marshalltown plant, and Waterloo plant.

Consumers Co. Div., Vulcan Materials Co., Chicago, Ill.—Department 376, Dunes Park, Ind.

Consolidated Rock Products Co., Los Angeles, Calif.—Sierra plant.

Cumberland Gravel & Sand Co., Lilesville, N. C.—Lilesville plant.

Decatur Sand & Gravel Co., Decatur, Ill.—Decatur plant.

John M. Ferry, Glendale, Calif.—Littlerock plant.

Gifford-Hill & Co., Inc., Dallas, Tex.—Holley plant.

Hallandale Rock Corp., Fort Lauderdale, Fla.—Fort Lauderdale plant.

Highspire Sand & Gravel Co., Harrisburg, Pa.—Harrisburg plant.

Houdaille Construction Materials, Inc., Morristown, N. J.—Portland sand and gravel plant.

Jefferies & Betts Gravel Co., Inc., Fort Worth, Tex.—Hurst plant.

The Walt Keeler Company, Inc., Wichita, Kan.—Wichita plant.

King's Concrete Co., Cedar Rapids, Iowa—Cedar Rapids sand plant.

Las Vegas Building Materials, Inc., Las Vegas, Nev.—Rock plant.

Lorain Elyria Sand Co., Lorain, Ohio—Lorain plant.

Lyman-Richey Sand & Gravel Corp., Omaha, Nebr.—Bridgeport plant, Columbus plant, and Louisville plant.

Mapco Sand & Gravel Co., Minneapolis, Minn.—Minneapolis plant.

McGrath Sand & Gravel Co., Inc., Lincoln, Ill.—Polo plant.

McKee Bros., Inc., Ramsey, N. J.—Ramsey plant.

Memphis Stone & Gravel Co., Memphis, Tenn.—Harrison, York pit plants.

Muskogee Materials Co., Muskogee, Okla.—Elm Grove plant.

Nathan Oaks & Sons, Inc., Oaks Corners, N. Y.—Oaks Corners plant.

Elmer E. Olson, Inc., Ephrata, Wash.—Ephrata plant.

Pacific Cement & Aggregates, Inc., San Francisco, Calif.—Lapis-Prattco plants No. 109, No. 110, and Olympia plant No. 125.

The Prince George Sand & Gravel Co., Laurel, Md.—Laurel plant.

Ray Industries, Inc., Oxford, Mich.—Oxford plant.

Rock River Ready Mix, Dixon, Ill.—Dixon plant.

St. Francis Material Co., Forrest City, Ark.—Caldwell plant.

Edward Sidebotham & Son, Inc., Wilmington, Calif.—Lomita plant.

Stancills, Inc., Edgewood, Md.—Edgewood plant No. 1.

The Standard Slag Co., Youngstown, Ohio—Mantua plant and Sargents plant.

Texas Construction Material Co., Houston, Tex.—Corrigan plant.

Triangle Rock Products, Inc., Arcadia, Calif.—Oro Grande plant.

Tulsa Sand Co., Tulsa, Okla.—Ralston plant and Tulsa plant.

Underwood Sand & Gravel Co., Pontiac, Mich.—Bald Mt. plant No. 3 and Utica plant No. 2.

Waverly Gravel & Tile Co., Shell Rock, Iowa—Shell Rock plant.

Westco Materials Corp., Austin, Tex.—Travis Materials, Inc., plant.

Western Indiana Gravel Co., Lafayette, Ind.—Anderson plant.

The Windsor Building Supplies Co., Inc., Newburgh, N. Y.—Plum Point plant.

The Joint Committee on Safety decided at its last meeting to add another feature to the contest which will give suitable recognition to sand and gravel plants whose record of participation in the annual safety contest shows that they have completed five consecutive years without a lost-time accident. Special certificates will be awarded to the following 19 plants, which have had accident-free records for the last five consecutive years:

American Aggregates Corp., Greenville, Ohio—Fort Jefferson plant.

Cemstone Products Co., St. Paul, Minn.—Lakeland plant.

Concrete Materials & Construction Div., American-Marietta Co., Cedar Rapids, Iowa—Waterloo plant.

Consolidated Rock Products Co., Los Angeles, Calif.—Claremont plant and Hewitt plant.

Jahncke Service, Inc., New Orleans, La.—Bluff Creek plant.

Lorain Elyria Sand Co., Lorain, Ohio—Lorain plant.

Edw. Lutz Sand & Gravel Co., Inc., Milwaukee, Wis.—Sussex plant.

Lyman-Richey Sand & Gravel Corp., Omaha, Nebr.—Cullom plant, LaPlatte railroad plant, LaPlatte truck plant, Bridgeport plant, and Columbus plant.

Material Service Corp., Chicago, Ill.—Cayuga plant.

Nathan Oaks & Sons, Inc., Oaks Corners, N. Y.—Oaks Corners plant.

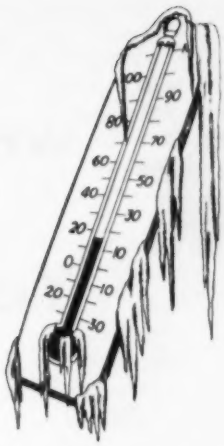
Pacific Cement & Aggregates, Inc., San Francisco, Calif.—Centerville plant No. 106, Lapis-Prattco plant No. 109, No. 110, and Olympia plant No. 125.

Waverly Gravel & Tile Co., Shell Rock, Iowa—Shell Rock plant.

Trophies will be presented to the three winning plants by *Rock Products* magazine at the Chicago convention next February. Certificates of Achievement will be mailed to accident-free plants which did not win trophies. All production and distribution employees of the three trophy-winning plants will be awarded Certificates of Accomplishment in Safety.

A total of 281 plants were enrolled by 149 member companies in this contest, the highest number in the history of the contest. The 1958 contest, which established the previous all-time high for participation, included 259 plants of 151 member companies.

Starting your diesel engine in cold weather



By HERB ORWIG

Development Engineer, Trojan Division
The Yale & Towne Manufacturing Company

EXPERIENCE has shown that owners of diesel-powered equipment often have difficulty starting an engine in cold weather because of a lack of knowledge about diesels. Since the combustion principles of diesels differ from those of gasoline engines, it follows that the starting technique is also different. A thorough understanding of cold weather diesel facts will facilitate quick and efficient starting and also eliminate the possibility of damage to the engine through incorrect starting procedures.

Here are the rules that should be observed:

- 1. Keep the engine in good operating condition. Good valve and ring seating provide maximum compression, which is necessary for easier starts and smooth running. Clean injector tips assure proper atomizing and even distribution of fuel.
- 2. Keep the battery at peak charge. Low temperatures reduce battery efficiency and rob cranking power.
- 3. For best results, use ether starting fluid or glow plugs, as directed.
- 4. Keep fuel clean and fuel lines free of water or air locks.
- 5. If shelter is available for your equipment, use it.

Diesel engines have no spark plugs; instead, high compression in the cylinder heats the air sufficiently to burn the fuel injected into it. When the engine is cold, the metal parts rapidly absorb the heat in the cylinder and thus prevent ignition. This happens every cold day, and the engine therefore needs help to get started.

Assuming that the starter is turning the engine at normal starting speed, there are two ways to get proper starting conditions: (1) by heating the air introduced into the cylinders; and (2) by using a fuel that burns at a lower temperature than diesel fuel. In some open-chamber diesels (such as Cummins) a glow plug is mounted in the intake manifold. When fuel is sprayed onto this glowing element, a small fire is kindled in the intake manifold; this heated air is drawn into the cylinder, providing enough boost to start the engine in most instances.

In an engine having a precombustion chamber, the glow plug is usually mounted in this small precombustion chamber, so that ignition begins in a fractional part of compressed air in each cylinder where fuel is injected. Usually, failure in starting with glow plugs results from the operator's impatience. He does not allow the plug to heat fully before he begins cranking.

Ether and ether-base fluids are fuels with a lower flash point (kindling temperature). The use of such fuels is a more popular method than others because it gives instantaneous results. Ether fluids are high-energy fuels, however; and if they are used carelessly or too freely, they can cause serious mechanical engine damage because of abnormal compression pressures.

In an engine with a glow plug in the intake manifold NEVER use ether and the glow plug at the same time. A nasty backfire or perhaps even more serious damage could result.

Ether starting fluids are available in gelatin capsules, pressure capsules, and aerosol-type pressure cans. Each form has its particular hardware to direct the ether to the engine intake manifold. All of them work effectively. Choose the one best suited to your needs. Both types of capsules are a "one-shot" proposition, while the aerosol can provides a more generous supply. Warm aerosol cans and capsules vaporize more quickly; so keeping them indoors until you need them is to your advantage.

Extremely cold weather causes crankcase oil to become very viscous. Obviously, it is difficult for the oil pump to circulate thickened oil, and consequently the initial start starves the cylinder walls and bearings of oil for a short time. It is especially important to avoid speeding the engine during this critical period.

There are multiple viscosity oils on the market which are thinner when they are cold. These oils have a low viscosity oil base, with certain resins added, and they thicken as they warm up. Diesel engine makers have been reluctant to approve the use of these special oils; therefore, always follow your engine maker's oil recommendation. If it is practical at the end of the working day to drain the oil from your engine

(Continued on page 151)

what you should know before you file

Your 1959 Income Tax Return

By HAROLD J. ASHE

AS the deadline approaches for filing individual income tax returns, one basic fact needs re-emphasizing: every dollar of adjusted gross income reported in an income tax return, above personal exemptions and deductions, is taxed at a rate starting at $1 on each $5. The government asserts its claim to at least $1, allowing the taxpayer to retain not more than $4. If a taxpayer is fortunate enough to rise above the lowest level of taxed earnings, he must surrender an even larger portion of his income to the government as a penalty for his success.

This article addresses itself to the income tax problems of the non-corporate quarry operator. However, appropriate points are equally applicable to the corporate business; and non-business tax problems are equally applicable to corporate executives in filing their individual income tax returns.

Prior to preparing and filing his individual income tax return, a quarry owner should keep the income tax bite in mind. It will strengthen his resolve to reflect in his income tax return every single business and personal deduction to which he is entitled. He will devote, without begrudging it, sufficient time to prepare a return that will result in no overpayment of tax, such as often occurs because of haste, carelessness, and oversights.

No taxpayer, no matter how large or small his business, can afford to overpay his income tax. Lack of time is no excuse. Considering his moderate profit margin, he can't afford to let any part of it slip through his fingers if he is legally entitled to retain it.

The mechanics of preparing an individual income tax return are now pretty well understood by taxpayers. Rather than reviewing the mechanics of preparing a return, this article will deal principally with those points in which there is continuing misunderstanding.

Use and Occupancy Insurance Proceeds Some quarry owners may carry overhead insurance to reimburse them for overhead expenses which run on during a period of disability or sickness. Proceeds received from such coverage must be reported as income. The same rule applies to use and occupancy insurance. Compensation is paid for loss of earnings due to a fire or some other disaster. These proceeds must be reported as income because they represent compensation for earnings lost, or for business expenses which run on, or both. Unlike insurance on tangible assets damaged or destroyed, use and occupancy proceeds are not the result of involuntary conversion.

Casualty Losses A good many taxpayers continue to overlook casualty losses they sustain during a tax year, particularly if these are minor. Insurance recovery, if any, must be taken into account in a casualty loss deduction. It may be a business or non-business loss. Intrinsic value must be used in determining the amount of the loss, not sentimental value. Except for a loss from theft or embezzlement, the loss must be deducted in the year it occurred, a fact which is readily determinable.

Embezzlement and Theft Losses Any losses due to embezzlement or theft are deductible, if not reimbursed through insurance, subject to the qualifications in the next paragraph. The net loss must be determined by the surety or fidelity bond proceeds received or the amount of the impending claim. The year the loss is discovered determines the year of deduction, though the loss may have actually occurred in an earlier year.

Inventory Loss A loss of inventory may occur because of a casualty, theft, or other invouluntary conversion. Ordinarily, this loss will be reflected in the cost of goods sold during the year, assuming that opening and closing inventories are accurate. If this is the case, deducting the loss will result in a double deduction. If separately deducted, the amount of the loss must be reflected in an adjustment of goods purchased or produced during the year.

Bad Debts A good many quarry operators persist in carrying certain accounts receivable as assets long after they have actually become bad debts. Such debts should be deducted in the business schedule in the year that worthlessness is established. To delay the deduction to a future year is to lose

the deduction. A bad debt can be deducted only in the year that worthlessness is established. Such a deduction in an income tax return does not weaken a creditor's right to enforce collection at a later date if the debt again becomes collectible. However, if collected, *the amount must be reflected in gross receipts in the year collected* as an offset to the earlier deduction and tax advantage. The bad debt, of course, must have been reported as income (accrual basis) in the year deducted, or earlier year, to be deductible in a tax return.

Non-business bad debts should also be deducted in the year that worthlessness is established; they should be reported as capital losses. A bad debt must be a legal debt, it must exist in fact, and it must be enforceable in court. Court action, however, is not necessary if it can be shown that such action would be futile.

Loans made to relatives may be disallowed if, in fact, such loans were really gifts and made without expectation of repayment. The same efforts must be made to effect collection from relatives as from non-relatives to establish a bad debt loss. If a loan has been forgiven, whether to a relative or not, it is a gift and is not deductible.

Repairs, Capital Aquisitions Repairs to a business building are fully deductible in the year made. *Repair* costs should not be confused with *capital outlays*. Repairs are those which keep a building in usable condition without materially adding to its value. Outlays which add materially to value must be capitalized, with cost recovered through annual depreciation charges. Repainting a building is a repair expense. Installing an office air conditioning system or putting on a new roof is a capital outlay. Machinery and equipment repairs are in the same category as building repairs.

Depreciation Business tools, equipment, fixtures, other depreciable assets—but not buildings—now may be depreciated in part by a new method. A 1958 amendment to the Internal Revenue Code permits taking an "additional first-year depreciation" allowance of 20 percent of cost. This is in addition to normal first-year depreciation. The new method is applicable to property acquired after December 31, 1957, which has a useful life of 6 years or more. Cost of assets so depreciated may not exceed $10,000 (on a joint return, $20,000). The corporation limit is $10,000.

This additional first-year depreciation offers a substantial reduction in an income tax bill in the first year. However, subsequent depreciation charges in future years will be less than otherwise. If taxable earnings in future years are not expected to be taxed at any higher rates than current earnings, it may be advisable to elect the additional first-year depreciation method for an immediate tax saving. However, if a business is growing, with earnings mounting, it may be better not to take the additional first year depreciation. This will defer a larger part of depreciation charges to future years, when the tax advantage will be greater.

Convention, Trade Show Expenses The cost directly attributable to a quarry operator attending a trade association convention, trade show, or similar event is a deductible business expense. Expenses which are deductible for such trips include transportation costs, lodging, meals, banquet tickets, and/or registration fee, taxi fares necessary to get to and from convention or show headquarters and taxpayer's hotel, and tips.

Not deductible are cleaning and laundry charges, night club tabs, sightseeing excursions, and similar non-business, personal expenses. Convention or show attendances does not permit giving personal outlays a business status.

Unless a clear and necessary business purpose can be shown, a wife's expenses are not deductible. However, if a husband and a wife attend, transportation and lodging costs for the husband should be determined on the basis of the *single* rate and *single* fare—not one-half of the double rate or family rate cost. This will permit a larger part of these expenses to be deducted.

Pre- or post-convention activities, either of the taxpayer's own planning or that of a convention committee, are not deductible. The costs of extended stops enroute are not deductible if these are not necessary. Neither are costs due to an extension of time beyond what is reasonable and necessary. This rule assumes that post-convention activity is not of a business nature.

Business Entertainment The Internal Revenue Service is continuing its crackdown on unwarranted, unnecessary, and unreasonable entertainment expense deductions, certain misleading news stories to the contrary notwithstanding. Reason: "business entertainment" has become a handy, overworked, and much abused device for reducing taxable income and for providing tax-free income for personal purposes. A large part of such outlays serves no business purpose, and can show no favorable business results.

Some quarry operators may have difficulty justifying any substantial outlays for entertainment in business schedules. There may be little necessity, if any, to entertain customers. Other operators may be obliged, as a condition for getting volume, to do a considerable amount of entertaining. In each instance, the business entertainment deduction must be a matter of *fact*, and must reflect objective conditions. If one quarry operator has a substantial entertainment expense it does not necessarily mean that another operator has need for a similar outlay. Entertainment deductions must meet three tests: are they ordinary, reasonable, and necessary?

The same tests apply to business gifts. If a deduction is made for business entertainment or for gifts, there should be explanatory records supporting the deduction in the event of challenge. Who was entertained? Why? How much did it cost? Tangible results stemming from such entertainment should be indicated.

Those Tricky Divisible Expenses A good many taxpayers have what may be styled divisible expenses (those

which are divided between business and personal outlays); or they may be partly income-producing (aside from business), and partly personal.

To the extent that these expenses are business or income-producing, they are deductible. To the extent they are not business or income-producing, such expenses may or may not be personal deductions, if the standard deduction is not elected.

Expenses of this kind result in considerable confusion, frustration, and often expensive income tax errors favoring the government. For purposes of preparing an income tax return, all divisible expenses, regardless of their nature, should first be set down in full on work sheets. They should be headed either business or non-business income-producing.

To the extent that these expenses are chargeable to business, they should be reflected in the business schedule. The remainder should then be set aside for later consideration in respect to whether any of these items are deductible or not in lieu of the standard deduction. The same procedure should be followed in respect to income-producing divisible expenses, such as those traceable in part to rental income.

Example: A taxpayer owns a duplex. He occupies one-half and rents the other. Maintenance and other costs should be apportioned between income-producing and personal use. If some costs, such as painting, can be traceable entirely either to the tenant or the landlord, this should be done. Repairing rental property is a deductible expense against gross rental income, but is not deductible on property occupied by the *taxpayer* (landlord). This division of expense should be made even if, in any event, certain expenses are deductible in full as personal deductions, such as property taxes.

Short-cuts taken on divisible expenses may be disastrous. A taxpayer may erroneously assume it is immaterial whether he charges a certain expense proportionately to rental income when he can, with less trouble, deduct the entire amount as a personal deduction. Example: mortgage interet and property taxes.

This is a common fallacy in preparing income tax returns involving divisible expenses. True adjusted gross income cannot be determined if some business or income-producing expenses are treated as personal deductions. When divisible expenses are so handled, a taxpayer *must* itemize personal deductions to get the tax benefit of such outlays.

The more divisible deductions that can be apportioned to business or income-producing sources (even if otherwise fully deductible as personal deductions), the greater the likelihood that an income tax saving will result. Only after the adjusted gross income has been brought down to its irreducible minimum can a taxpayer make an intelligent decision as to whether to itemize personal deductions or elect the standard deduction.

In considering divisible outlays, a quarry owner should not overlook any business use to which he puts his personal car. The same method for determining business expenses as indicated in the foregoing is applicable. Some of the expenses, traceable to personal use, may be deducted as personal deductions, if the standard deduction isn't used. To the extent of business use, depreciation charges on the car should not be overlooked. Car depreciation, due to personal use, is *not deductible*, however.

Driving a car to and from home and business is not business use. Calling on customers or attending trade shows and conventions does constitute business use, as does driving between two or more plants owned by a taxpayer.

Expenses of Other Income In reporting income from sources other than his business, a taxpayer should exercise great care to make sure all deductible expenses are reported in his income tax return, reducing his adjusted gross income from such income sources.

In reporting a gain or a loss from a sale, all expenses incident to the transaction should be itemized and deducted to reduce the gain or increase the loss, as the case may be. These expenses, if paid by the seller, may include such items as escrow charges, commissions or brokerage fees, and title insurance and advertising costs.

Rental Property Expenses Expenses incident to rental property should be fully reflected in schedule G under three broad categories: depreciation, repairs, and other expenses. Depreciation should be fully explained in the appropriate space. Repairs and other expenses should be itemized.

If capital improvements have been made in a rental property during the year, these must be depreciated over their normal useful life, just as in the case of the building itself. (See earlier heading on "repairs and capital acquisitions".) Mandatory expenses, such as those for sewer or paving, must be capitalized (even if the cost is in the form of an assessment district) and the cost showing on property tax bills should be used.

Business accounting records may be adequate, but some effort may be necessary to reconstruct all rental property expenses. It may be necessary to search out cancelled checks and receipts. Often overlooked expenses include rental advertising, agent's commissions, casual labor paid by cash, fire and extended insurance premiums, some utility bills (if paid by the landlord), minor repairs, and maintenance expenses.

Exemptions A surprising number of taxpayers fail to take an additional exemption on reaching the age of 65 years. Note carefully: age 65 is reached the day *before* the birthday, for income tax purposes. If a 65th birthday falls on January 1, 1960, that person is deemed age 65 on December 31, 1959, and rates a $600 age exemption. It is available to either spouse, but it cannot be claimed for a dependent, such as a parent. If either spouse becomes blind during the year, even as late as the year-end, he rates a $600 blind exemption. However, this exemption also is denied to a dependent.

Dependents Rules regarding dependents are complex, sometimes confusing. Many dependency exemptions are disal-

lowed because in one or more respects rules have not been complied with. Instruction sheets accompanying income tax forms spell out most of the requirements.

Some taxpayers ignore citzenship tests for dependents, particularly in regard to supporting relatives in foreign lands. *The dependent must be a citizen or resident of the United States, or a resident of Canada, Mexico, the Panama Canal Zone or the Republic of Panama.* Except for the foregoing inclusions, a person living anywhere else in the world may not be claimed as a dependent unless he is (a) a citizen or resident of the United States, or (b) was a resident of the United States, Canada, Mexico, the Panama Canal Zone or the Republic of Panama for at least some part of the tax year.

Funds contributed by a dependent to his support must be fully reckoned, regardless of their source, *including funds which are tax-free.* Many taxpayers lose dependency claims because they mistakenly assume the tax-free nature of funds makes them excludable in determining the more-than-one-half test of support contributed. For example, Social Security benefits drawn by a beneficiary must be counted in determining the amount of support he contributed and whether, with this, the amount he contributed is less than one-half and the taxpayer's share is more than one-half. A minor receiving survivor benefits from Social Security is in the same category.

Important Points DON'T trust irresponsible tax scuttlebutt you may hear.

DON'T assume that because the standard deduction saved you money in past years it will do so again in your 1959 income tax return. Personal circumstances may have changed. The only safe rule is to itemize all personal deductions first, overlooking none, and compare these with the available standard deductions before deciding.

DON'T assume that credit card billings are evidence of deductibility, as is sometimes claimed. The purposes to which they are put, item by item, are determining. An independent record should have been built to support such parts of billings that are deducted.

DON'T assume absence of any records is a defense, if an income tax return is challenged. Absence of supporting records only strengthens the government's case and weakens the taxpayer's defense.

DON'T "guesstimate" deductions which are subject to determinable exactness.

DON'T in calculating personal deductions, fail to exclude that part of medical expenses which, on the basis of the adjusted gross income, cannot be deducted. Until this exclusion has been made, a taxpayer may not be able to make an intelligent decision between itemizing personal deductions and taking the standard deduction.

DON'T throw away aging records. Keep a copy of each income tax return, plus work sheets and all basic records to support deductions.

DON'T hesitate to employ experienced tax counsel for aid, if special tax problems arise or borderline situations come up.

Declaration Of Estimated Income Tax In filling the initial Declaration of Estimated Income Tax for 1960, a taxpayer may base his estimate on his adjusted gross income for 1959. However, he should make any adjustments necessary to take into account any 1959 income that will not recur in 1960, such as that arising from gains taken. Depreciation charges may be larger or smaller in 1960 than in 1959, altering the amount of income. An age or blind exemption may be available for the first time in 1960. There may be a change in the number of dependents.

If, in filing his 1959 income tax return, a taxpayer has overpaid on his income tax bill through quarterly installments, he has a refund due. He may either ask for a refund, or credit the overpayment to his 1960 income tax estimate. The latter may be preferable. Indirectly, this gives him the use of such overpayment immediately, in that it is applied to his first quarterly installment in full, even while he waits for a refund on his 1959 income tax return.

Starting Your Diesel

(*Continued from page* 147)

while it is warm, it can be warmed in the morning and added just before cranking the engine.

Most automotive-type diesels have electric cranking motors as utility starters. Since accessory loads vary so widely, the choice of batteries has always been the result of experience. Under normal conditions most batteries are adequate, but cold weather causes frequent failures.

Generally speaking, more and larger plates mean a greater reserve of cranking power. If your battery is in good condition but fails to start your engine because it does not last long enough, a larger battery will crank your engine for a longer period. Price, physical size, and weight are all good indications of battery size. Gasoline - starting engines give unlimited cranking duration, once started. Air starters are excellent since they usually give higher cranking speed, but a regular mobile compressor unit is usually needed to supply enough air.

If a shed is available to shelter your equipment, use it. Fully enclosed sheds can be heated enough to be of real benefit in starting the engine since the air, crankcase oil, and coolant all get the benefit of the warmth. In some cases cylinder head bolts may be replaced with special bolts having built-in electrical heating units. These heaters help by giving warmth to the coolant in the engine water jacket and usually require only normal house current.

After your diesel engine is started and running smoothly, it will warm up to its most efficient operating temperature more quickly if it is run through its ordinary work cycle at a moderate pace. A good rule is to let the engine temperature come up to nearly normal before demanding full engine power.

The key to a smooth-functioning diesel engine in cold weather is a thorough knowledge of the starting procedure rules and then observing them every day.

According to a release issued by the National Gypsum Company, the firm's third quarter (1959) sales and earnings were the highest for any quarter in the firm's history.

N.S.G.A.—N.R.M.C.A. Convention Program

Conrad Hilton Hotel, Chicago, Ill., Feb. 15-19, 1960

MONDAY, FEBRUARY 15

Committee sessions all day

TUESDAY, FEBRUARY 16

9:30 a.m.—State and Area Association Conference

Presiding officer—H. G. Feraud

"Co-ordination of the Activities of State and Area Associations with Those of the National Associations"—R. C. Shiely, vice-president, J. L. Shiely Co., St. Paul, Minn.

"Co-operation with State Highway Departments on Common Problems of the Aggregates Producer"—Ralph E. Simpson, engineer-director, Indiana Mineral Aggregate Association, Inc.

"Collective Bargaining with Unions on a State-wide Basis"—Clifford R. Oviatt Jr., executive secretary, Connecticut Ready Mixed Concrete Association

"The Ready Mixed Concrete Industry in Montana Organizes for Group Action"—W. A. Carson, director, Montana Ready Mixed Concrete Association

"From a Businessman's Point of View, What are the Opportunities for Group Action by a State or Area Association?"—James A. Nicholson, president, Nicholson Concrete Co., Toledo, Ohio

2:30 p.m.—Session on N.R.M.C.A.-N.S.G.A. Group Insurance Plan and Retirement Plan for Member Companies

Presiding officer—Charles E. Brady

"Advantages Derived by My Company from Participation in Group Insurance Plan and Retirement Plan"—Henry H. Kirwin, treasurer, Eastern Rock Products Co., Utica, N. Y.

"Arizona Aggregates Association Signs State-wide Agreement with Labor Unions Calling for N.R.M.C.A.-N.S.G.A. Group Insurance Plan"—James A. Murphy, president, Arizona Sand & Rock Co., Phoenix, Ariz.

Panel discussion on two plans with audience participation invited:
Mr. Kirwin
Mr. Murphy
Kenneth E. Tobin, Jr.
Group Administrator
Donald E. Shepherd
Plan Consultant

WEDNESDAY, FEBRUARY 17

9:30 a.m.—Session 1—(simultaneous with Session 2)

NATIONAL SAND AND GRAVEL ASSOCIATION

Presiding officer—E. Phil Gemmer

Address of the president
Mr. Gemmer

"Transportation—Our Industry's Number One Cost"—Ellis E. Jensen, president, Janesville Sand and Gravel Co., Janesville, Wis.

"Does Land Reclamation Pay For the Sand and Gravel Producer?"—Donald I. Battjes, secretary, Grand Rapids Gravel Company, Grand Rapids, Mich.

"Significance of Tests for Concrete Aggregates"—Delmar L. Bloem, Associate director of engineering

"What the Sand and Gravel Producer Should Know About the Percentage Depletion Allowance"—John T. Sapienza, Counsel for associations

Safety awards

Election of officers

WEDNESDAY, FEBRUARY 17

9:30 a.m.—Session 2—(simultaneous with Session 1)

NATIONAL READY MIXED CONCRETE ASSOCIATION

Presiding officer—F. E. Schouweiler

Address of the president
Mr. Schouweiler

"Progress Report on Second Investigation of Uniformity of Strength Producing Properties of Portland Cement"—Richard D. Gaynor, Associate research engineer

"Tailoring a Public Relations Program for a Ready Mixed Concrete Company in a Small Community"—Thomas F. Doyle, Galesburg Builders Supply Co., Galesburg, Ill.

"Words Often Speak Louder than Actions"—Andrew B. Meldrum, vice-president, Meldrum and Fewsmith, Inc., Cleveland, Ohio

Presentation of Public Relations Performance Awards—Ralph H. Anderson, chairman, Committee on public relations

Presentation of safety awards

Election of officers

2:30 p.m.—Session 3—No simultaneous session

NATIONAL SAND AND GRAVEL ASSOCIATION
NATIONAL READY MIXED CONCRETE ASSOCIATION

Presiding officer—Fred P. Curtis

"A Candid Look at the Highway Program"—Bertram D. Tallamy, Federal highway administrator

"How Does the Internal Revenue Service Operate—Some Observations"—Dana Latham, Commissioner of Internal Revenue

"Successful Management of a Growing Business"—Dean James L. Hayes, School of Business Administration, Duquesne University, Pittsburgh, Pa.

8:30 - 10:00 p.m.—Portland Cement Association presentation of films of interest to the industries

THURSDAY, FEBRUARY 18

9:30 a.m.—Session 4 (simultaneous with Session 5)

NATIONAL SAND AND GRAVEL ASSOCIATION
NATIONAL READY MIXED CONCRETE ASSOCIATION

Presiding officer—Henry H. Kirwin

Description of the Looseleaf Ring Binder on Fiscal Matters—Mr. Kirwin, chairman, Joint Committee on Fiscal Policies

Report on Operating Cost Ratio Surveys for Ready Mixed Concrete and Sand and Gravel—Kenneth E. Tobin Jr., associate executive secretary

"Congress Takes Another Look at the Internal Revenue Code"—John T. Sapienza, Counsel for associations

Panel on Fiscal Matters:
S. James Campbell, Harry T. Campbell Sons' Corp., Towson, Md.
Ward Anderson, Albuquerque Gravel Products Co., Albuquerque, N. M.
James R. Spear, The Dolese Company, Oklahoma City, Okla.
George C. Eady, Consumers Supply Co., Louisville, Ky.
R. O. Evans, Concrete Supply Co., Charlotte, N. C.

THURSDAY, FEBRUARY 18

9:30 a.m.—Session 5 (simultaneous with Session 4)

NATIONAL SAND AND GRAVEL ASSOCIATION

Presiding officer—Irving Warner Jr.

"A Modern Dredge for the Mining and Processing of Sand and Gravel from Underwater Deposits"—William L. Price, Dravo Corporation, Pittsburgh, Pa.

"A One-Two Punch Beneficiation System—Combining Heavy Media and Elastic Fractionation"—Robert F. Guise, Whittaker & Gooding Co., Ypsilanti, Mich.

"The Functioning of a Sand and Gravel Plant Designed for Uniform Grading Control"—John S. Walker, engineer, Harry T. Campbell Sons' Corporation, Towson, Md.

"A New Type of Dredge for Sand and Gravel Recovery"—C. G. Cooley, president, Cooley Gravel Company, Denver, Colo.

12:30 p.m.—Joint luncheon—Presiding officer—F. E. Schouweiler, president, N.R.M.C.A.

Address by the Honorable Carl T. Curtis, United States senator from Nebraska

THURSDAY, FEBRUARY 18

2:30 p.m.—Session 6 (simultaneous with Session 7)

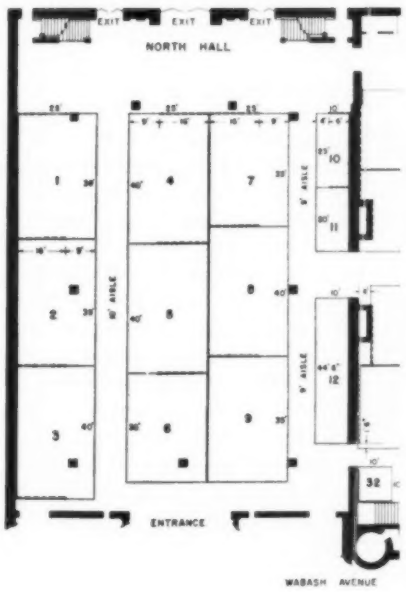
NATIONAL SAND AND GRAVEL ASSOCIATION
NATIONAL READY MIXED CONCRETE ASSOCIATION

Presiding officer—Quentin W. Best

"What the Homebuilder Expects from Ready Mixed Concrete in the Way of a Quality

(*Concluded on page* 155)

COMBINED



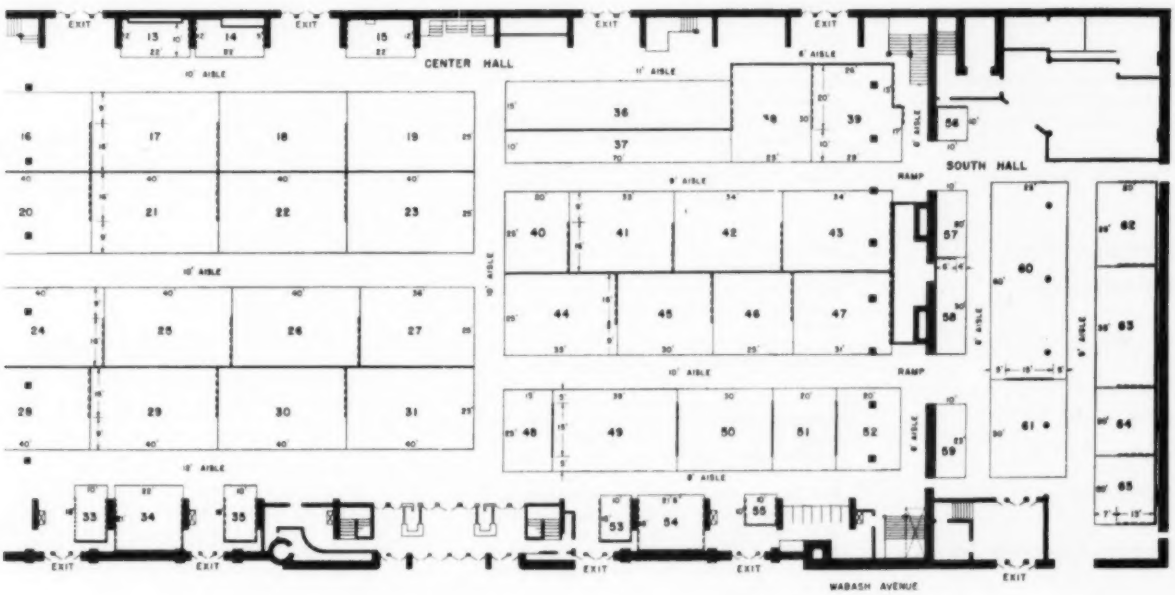
Exhibits at the Chicago Coliseum

N.S.G.A. and N.R.M.C.A. Equipment Show

EXHIBITOR	PRODUCTS SHOWN	BOOTH	EXHIBIT PERSONNEL
Air Conveyors Co.	Cement pump	63	L. Griffin, et al.
Allis-Chalmers Mfg. Co. Construction Machinery Div. Industries Div.	Large air-suspended screen, rubber-lined pumps, motors, unitized motor starters	2, 3	F. E. Briber, A. L. Stewart, A. K. Boszhardt, W. Dannenbrink, T. A. Oberhellman, et al.
Allison Div. General Motors Corp.	Medium and heavy duty fully automatic truck transmissions, front-end loader transmissions	54	J. K. Knighton, A. R. Schuette, E. H. Scheiwe, E. W. Smith
American Hoist & Derrick Co.	Shovel, display of drop forged fittings for wire rope and chain	49	R. J. Mills, H. P. Bradley, Steve Brown
Baldwin-Lima-Hamilton	New 5-cu. yd. loader	22	Jack Hardesty, James Moore, Michael Peirce, Jack Watson, Al Bellows, John Rothe, Herbert Hesse, Paul Hawkinberry, James McPheron, Francis Murphy, et al.
Barber-Greene Co.	Scale models conveyor installations and bulk handling techniques, photo murals	34	H. Newton, E. Fauth, C. Coon, P. Hanson, M. Hnatiuk, O. Orland, F. Bernard, et al.
Blaw-Knox Company Construction Equipment Div.	New truckmixer with 3 different power arrangements, separate engine drive, front of engine PTO, rear of engine PTO, new truckmixer loading plant with automatic batching control panel	29	W. F. Simmons, L. H. DeVilling, R. E. Hoppenrath, G. Moritz, A. George, W. J. Berschger, B. Meyer, D. Bensen, G. Ehrhardt, O. Olden, B. Gray, J. Bunder, H. McGowan, R. McKenzie, B. Conway
Butler Bin Co.	Portable batching plant, feeders, equipment data	48	M. R. Butler, et al.
J. I. Case Co.	Loader, photo display	14	D. A. Milligan, J. P. Cody, A. L. Light, D. H. Mitchell
Caterpillar Tractor Co.	New power shift transmission with torque divider, D8 tractor with various equipment, heavy-duty diesel engine	18	K. F. Ames, R. D. Evans, J. J. Keyes, W. A. Haley, J. H. Reeves
Chain Belt Co. Construction Machinery Div. Bin and Batcher Div.	Bin and batching equipment, automatic batching units, truck mixers, conveyor components	41, 42	O. Carpenter, W. Messinger, R. Krikorian, C. Christy, W. Stuller, D. Lovejoy
Chain Belt Co. Industrial Div.		39	
Chevrolet Motor Div. of General Motors Corp.	New tandem with 5-cu. yd. mixer	7	Harold Andersen, D. A. Weaver, H. E. Orvis, L. A. Feely, L. J. Forman
Clark Equipment Co.	Tractor shovel, tractor dozer	28	Al E. York, W. V. Richards, C. G. Kennedy, Charles Ellis, Frank Reach, Dudley Burnett, J. L. Dorfler, et al.
Clayton Manufacturing Co.	Steam generator	10	J. A. Cortright, N. Ballingall, W. Clayton Jr., F. Davis, A. Murner

(Turn page)

BIENNIAL SHOW — CHICAGO COLISEUM, FEBRUARY 15-19, 1960



EXHIBITOR	PRODUCTS SHOWN	BOOTH	EXHIBIT PERSONNEL
Columbia-Southern Chemical Corp.	Literature, photo display	55	
Concrete Transport Mixer Co.	6-cu. yd. truck mounted mixer with flywheel PTO	46	T. H. Fleming, O. H. Manchester, J. J. Meister, F. W. Rechsteiner
Construction Machinery Co.	Aluminum truck mixer with flywheel PTO on Reo chassis, steel mixer, mock-up of PTO	23	W. Holden, H. Holden, C. Larsen, H. McDermott, et al.
Continental Motors Corp.	Cut-away engine units, photo display parts and service	59	C. Reese, C. Johnson, R. Phillips, G. Somers, C. Lathrop, G. Sculley, S. DeMilio, C. Bellinger, J. Sikkenga
Cook Bros. Equipment Co.	Truck mixers, concrete finishing equipment	19	
Crane Carrier Corp.	Flywheel PTO display, vehicles with mounted mixers, lightweight trucks with aluminum and high alloy components	5	B. Zeligson, B. Shames, B. Wall, H. Hackman, J. Tattan, B. Wood, G. Alter, W. Picard
Detroit Diesel Engine Div. General Motors Corp.	6-cyl. V-type 218-hp. automotive engine, activated 130-hp. cutaway engine	33	R. S. Wagerson, G. Potts, P. Merkert, J. J. Crowe, D. C. McMillan, S. O. Keel, L. R. Nowacki
Diamond T Motor Truck Co.	6-wheel chassis with flywheel PTO and 6-cu. yd. mixer unit	40	H. Matthews, H. Cook, W. S. Baldwin, J. G. Mortensen
Dodge Div. - Chrysler Corp.		6	
Eagle Crusher Co., Inc.	Single cage mill, working model 4 cage disintegrating mill, photos of hydraulic hoist and dump body equipment	15	R. White, R. N. Rick, H. E. Kruger
Erie Strayer Co.	Trailer portable batch plant with new batching equipment	37	R. L. Strayer, H. W. Strayer, C. J. Polinek, A. Brennet, W. Jenkins, J. P. Godfrey, H. C. Riley
Euclid Div. General Motors Corp.	New 225-hp. crawler tractor	1	G. Perry, J. W. Bloomquist, R. E. Keidel, A. S. McClimon, R. H. Rogers, E. C. Dellen, J. H. Sharda, T. S. Bishop, R. Garner
Fleet Sales Dept. Ford Div. of Ford	New design data, late model equipment	16	
Ford Motor Co. Tractor & Implement Div.	Industrial tractor with newest type transmission, loader and 14-ft. backhoe attachments	17	F. W. Conover, E. Drogimir, J. E. Pierce, J. L. Turrill
FWD Corporation	New lightweight 6x6 truck specially designed for ready-mix application, companion 6x6 with new type Cummins diesel	4	J. A. Driessen, G. F. Decoursin, L. Pernod, W. Snyder, A. Laack
GMC Truck & Coach Div. General Motors Corp.	New V-6 and twin-6 gasoline engines, new 90-in. conventional cabs and 72-in. steel tilt cabs, chassis with 6½-cu. yd. mixer driven by front mounted PTO, chassis with 6½-cu. yd. mixer with separate power plant	60	L. B. Gately, et al.
The Heltzel Steel Form & Iron Corp.	Standard unitized intermediate bin section with 6-cu. yd. split cement and aggregate batchers, beam and dial scales	45	C. J. Heltzel, R. E. Heltzel, R. C. Perrett, H. C. Wetzel Jr., G. R. Graves, K. C. Simpson, R. L. Burnett, R. P. Jones, G. D. Mathews, W. A. Davison
Hendrix Manufacturing Co., Inc.	Dragline bucket	13	G. B. Hall, C. W. Hall, W. R. Hendrix, O. L. Hendrix, J. M. Rice, E. E. Trippe, G. E. Trippe
Hercules Gallon Products, Inc.	Truck mounted concrete transit mixer	62	R. A. Bohmer, P. S. Hartman, W. A. Hoy
The Frank G. Hough Co.	Several models of tractor-shovels, including new H-120	8	G. A. Gilbertson, M. J. Weber, R. L. Knox, D. O. Ross, A. P. Simpson, D. D. Hunsaker, R. L. Beyerstedt, H. R. Brown, K. B. Larkin, R. A. White, J. C. Bernard, M. L. Crawford
Instant Moisture Control Div. Colorado Premix Concrete Co.	Measuring and controlling instrument for moisture in concrete aggregate	56	J. Cain
The Jaeger Machine Co.	New 8-cu. yd. horizontal mixer, mixer blading design, lightweight mixer and weight distribution facts	31	R. McLean, R. C. Bohannan, H. F. C. Pelsue, J. D. Anderson, A. C. Thomas, E. Baugh, J. H. Apel, W. C. Berry, et al.
The C. S. Johnson Co.	Electronic batch controls	52	T. B. Appel Jr., C. P. Blair, H. Buckler, A. K. Downs, J. Hunt, J. E. Johnson, C. Lindsay, R. Russell, J. Shapland, A. J. Vincent, A. L. Yelle
Koehring Company	Late model crawler-mounted, full-revolving front-end loader	51	E. Goree, K. Chandler, W. Dickerson, C. Andresen, E. Goes, M. Jaeger, et al.
Link-Belt Company	Late design screens, conveyors, material handling equipment, power transmission components	25	W. G. Nighbert, et al.
Link-Belt Speeder Corp.	Visual display full function design, ¾-cu. yd. excavator upper works in motion	24	C. M. Basile, N. V. Chehak, M. P. Luber, D. F. Van de Roovaart, R. A. Smith, E. E. Weis Jr., H. W. Ludwig, C. F. Sweeney, R. L. Fulwider
Mack Trucks, Inc.	Working models of components, 6-cu. yd. mixer with fly-wheel PTO, 6-wheel drive chassis with large single tires	20	T. H. Jones, T. J. Zeller, W. May, A. G. Crockett, J. Walker, R. D. Peo, R. J. Meinert, E. Brunner, D. M. Sunderland, C. E. Hallock
Martin Engineering Co.	Ball type, silent, vibration inducers, vibration accessories and mounts, new model hopper car shaker	53	W. J. Dougherty, W. E. Dougherty, E. F. Peterson, E. H. Peterson, M. Peterson, J. T. Haney, D. E. Martin, et al.
Meckum Engineering, Inc.	Full size sand and gravel jig, 6-in. standard dredge pump, new 5-in. material handling pump	64	J. W. Meckenstock, C. R. Gnuske, H. C. Troup, R. Henry, P. J. Meckenstock, L. Stogentin, M. Hill

EXHIBITOR	PRODUCTS SHOWN	BOOTH	EXHIBIT PERSONNEL
Monarch Road Machinery Co.	Hydraulic controls for ready-mix trucks	11	G. A. Jackoboice, E. W. Jackoboice, W. P. Ferris, J. Barwacz
Morris Machine Works	New solids pump for pumping sand and gravel and dredging	32	R. C. Beach, M. Slahor, W. H. Pfarrer, W. M. Mercer, R. G. Humphrey
Murphy Diesel Co.	Display of engines, power units, generator sets, background exhibit of various field installations	12	P. Schnetzky, L. Delaney, G. Gauger, J. Vogler, G. Anderson
Noble Company	Full size automatic batching equipment with new developments in automation and recording, scale models of standard plants	26	N. Searls, R. Clark, et al.
Oshkosh Motor Truck, Inc.	Concrete carrier chassis	61	O. B. Zimmerman, A. M. Marker, L. A. Miller, O. E. Scott, F. Wm. Jahn, E. B. Grubb
The Owen Bucket Co.	3 clamshells illustrating the complete line of buckets	58	W. H. Botten, J. P. Botten, W. L. Marsteller
Reo Division of The White Motor Co.		9	G. R. Collins, et al.
Ross Porta-Plant	Portable overhead batch plant, portable bulk cement silo	36	R. H. Ross, C. L. Ross, W. Morris, B. D. Keeler, A. M. Williams
S & M Manufacturing Co.	Truck-mounted agitating unit	38	H. Malm, G. Maxon, M. Saben, E. H. Malm, D. H. Malm, B. Saben
The T. L. Smith Co.	Truck mixers	44, 57	R. W. Smith, W. A. Clayton, G. A. Whitman, J. R. Heinrich, W. G. Rider, B. F. Durham, V. G. Cearley
Union Wire Rope Corp.	High carbon wire, machine braided slings, literature, model crane display with stress demonstration on slings	35	
Western Machinery Co.	New sand processing equipment, controlling mechanisms	43	D. S. Boman, G. F. Cofield, H. K. Cogswell, C. E. Golson, W. F. Haddon, G. E. Jarpe, J. M. Lima, J. K. Mueller, P. H. Mulcahy, W. H. Newton, F. V. Schneider
Whiteman Manufacturing Co.	Mixer mounted on White truck	50	G. A. Teasdale, M. E. Whiteman, Jr., E. Megroz, R. Strand
The White Motor Co.	Line of tandems for ready-mix and dump operations, several equipped with new belt-driven flywheel PTO	30	J. N. Bauman, H. J. Nave, H. D. Weller Jr., K. A. Roesch, W. Mason, et al.
Willard Concrete Machinery Co., Inc.	Concrete transit mixer	65	J. J. Willard, J. E. Bailey, E. R. Cox, D. Lewin
Worthington Corporation	Chassis-mounted truck mixers, including separate engine drive unit, flywheel PTO unit, front-end PTO unit, aggregate recovery unit.	21	A. M. Tullo, B. R. McBath, G. Ross, H. F. Broom, P. J. Foley, L. V. Gilroy, E. F. Kelly, J. T. Carroll, R. J. Romanin, F. J. Reardon, C. F. Welch, et al.
The Yale & Towne Manufacturing Co. Trojan Division	2- and 3-cu. yd. 4-wheel drive tractor shovels	47	C. D. Bobbitt, W. J. Zorn, S. Osborn, H. W. Hennessey

N.S.G.A.-N.R.M.C.A. Program (*From page* 152)

Product and Quality Service—W. H. Day, president, Jackson Ready-Mix Concrete, Jackson, Miss.

"Wider Employment of Ready Mixed Concrete in Highway and Street Paving"—William F. Mengel, vice-president, F. F. Mengel Co., Wisconsin Rapids, Wis.

"The use of promotion aids in development of wider employment of ready mixed concrete"—George H. Tsuruoka, manager, Housing & Cement Products Bureau, Portland Cement Association, Chicago, Ill.

"Effective Scheduling and Dispatching Procedures as Part of Sound Merchandising Program"—George R. Bathe, president, Ready Mixed Concrete Co., Omaha, Nebr.

THURSDAY, FEBRUARY 18

2:30 p.m.—Session 7 (simultaneous with Session 6)

NATIONAL READY MIXED CONCRETE ASSOCIATION

Presiding officer—Elbert F. Lewis

"Concrete Batching Equipment with Particular Reference to Automation"—Kenneth P. Kerr, chairman, Concrete Plant Manfacturers Bureau; and vice-president, Butler Bin Company, Waukesha, Wis.

"Problems in the Operation of Truck Mixers"—A. C. Thomas, assistant general sales manager, The Jaeger Machine Co., Columbus, Ohio

"A New Type of Central Mixing Plant"—R. C. Shiely, vice-president, Guaranteed Concrete Company, St. Paul, Minn.

"The Functions of a Concrete Control Engineer"—Harry Irwin, Warner Company, Philadelphia, Pa.; Herbert C. Cullison, Harry T. Campbell Sons' Corp., Towson, Md.

"A Review of the Status of the ASTM Standard for Ready Mixed Concrete"—Fred F. Bartel, chief engineer, Tews Lime and Cement Company, Milwaukee, Wis.

FRIDAY, FEBRUARY 19

9:30 a.m.—Session 8 (simultaneous with Session 9)

NATIONAL SAND AND GRAVEL ASSOCIATION

NATIONAL READY MIXED CONCRETE ASSOCIATION

Presiding officer—Herbert G. Jahncke

"How Does the Griffith-Landrum Bill Affect the Operations of the Sand and Gravel and Ready Mixed Concrete Industry?"—John J. Adams, Squires, Sanders & Dempsey, Cleveland, Ohio

"Where Does the Industry Stand in Relation to the Federal Wage and Hour Law, the Davis-Bacon Act and the Walsh-Healey Act?"—Charles A. Horsky, Counsel for associations

Panel discussion on above subjects:
John J. Adams
Charles A. Horsky
Herbert G. Jahncke
Vincent P. Ahearn

"Washington Report"—Mr. Ahearn

FRIDAY, FEBRUARY 19

9:30 a.m.—Session 9 (simultaneous with Session 8)

NATIONAL SAND AND GRAVEL ASSOCIATION

NATIONAL READY MIXED CONCRETE ASSOCIATION

Presiding officer—E. J. Nunan

"Lightweight Concrete and the Ready Mixed Concrete Producer"—John W. Roberts, president, Southern Lightweight Aggregates Corp., Richmond, Va.

"Prestressed Concrete and the Ready Mixed Concrete Producer"—William J. Hicklin Jr., vice-president, Capitol Concrete Co., Jacksonville, Fla.

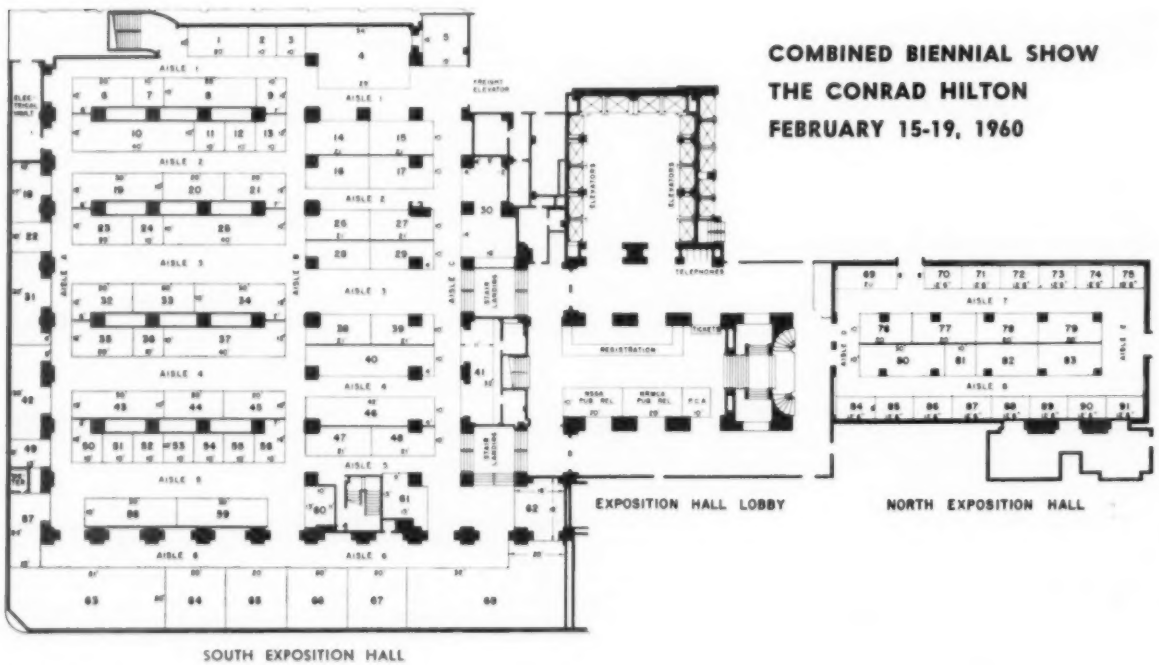
Review of Current and Projected Researches—Delmar L. Bloem, associate director of engineering

Discussion of A.C.I. "Recommended Practice for Measuring, Mixing and Placing Concrete" with particular reference to recommendations covering "finish screening"—Stanton Walker and E. L. Howard, chief testing engineer, Pacific Cement & Aggregates, Inc., San Francisco, Calif.

N.S.G.A. and N.R.M.C.A. Equipment Show

Exhibits at Conrad Hilton Hotel

EXHIBITOR	PRODUCTS SHOWN	BOOTH	EXHIBIT PERSONNEL
American Manganese Steel Div., American Brake Shoe Co.	New 6-in. dredge pump for sand and light gravel, two rods to handle all hardfacing needs	64	T. C. Baker, J. A. Brandenburg, J. S. Carr, W. E. Crocombe Jr., N. M. McGuire, et al.
Autolene Lubricants Co.	Air meter, air entraining and dispersing agents, curing and tilt-up compounds, form oils, bonding agents	17	J. S. Horn, D. J. Wilson, C. S. Wilson, et al.
Building Supply News	Trade publication	89	
Burkhart Engineering Associates, Inc.	Boiler unit displaying latest improvements and consolidated installation design for variable load	11	L. Polisner, R. Dupre, D. J. Rapley, W. H. Herbitts
C & W Sales Co., Inc.	New portable moisture meter, and standard unit	77	F. B. Hitchcock, M. Dickman, P. Talbot, S. M. Volk, E. W. Welch, C. Rogers, W. B. Welch
Chicago Fly Ash Co. jointly with: Detroit Edison Co. Walter N. Handy Co. McNeil Brothers, Inc.	Descriptive data, photos on fly ash utilization	28	C. E. Lovewell, R. Howard, C. Weinheimer, J. Wilde, W. N. Handy, T. Woodford, B. McNeil
Cleaver-Brooks Co.	60-hp. packaged boiler installation	39	O. E. Jacobsen, W. R. Schuman, et al.
Concrete Controls Corp.	Moisture compensating and controlling systems	85	P. M. MacKinney, B. J. MacKinney
Concrete Publishing Corp.	Trade publication	72	
Contractors & Engineers	Trade publication	86	
Cross Perforated Metals	Perforated plate hexscreen, plus round, square, slotted opening screening surfaces, new wedgewire and perforated sheet screening	20	S. Fulkerson, G. Day, D. Coleman, R. Coxey, C. Lloyd, G. Tench, E. Weaver, et al.
Cummins Engine Co., Inc.	Cut-away models 130- to 600-hp. engines, torque converter unit	68	C. Boll, G. Bego, C. Martin, B. Sears, J. Morgan, T. Paxton
Frank D. Davis Co.	New colors for integrally-colored ready-mixed concrete, abrasive grains for non-slip concrete surfaces	91	F. D. Davis, P. Raber, J. H. Jacobik, H. C. Crawford
Deister Machine Co.	Latest model vibrating screen	45	I. F. Deister, E. Deister Jr., I. F. Deister Jr.
Dewey and Almy Chemical Co.	Air entraining, water-reducing, and retarding agents for concrete	80	W. Rand Jr., G. W. Kirchwey, et al
Diamond Iron Works Div. of Goodman Manufacturing Co.	Section of wire rope frame conveyor	76	C. E. Hanson, B. J. Kastein, D. R. Freeberg, J. H. Harrigan Jr., J. A. Hart



EXHIBITOR	PRODUCTS SHOWN	BOOTH	EXHIBIT PERSONNEL
Dodge Manufacturing Corp.	A new line of V-belt drives, demonstration recently introduced rubber-tire shaft coupling, controlled acceleration device and overload protector, torque-arm speed reducer	58	L. J. Cashman, J. Muir, A. L. McKay, C. Leide, R. Fanning, A. Knox
Eagle Iron Works	Working model heavy media separation plant, cutaway working model of water scalping-classifying tank, working model chain screen type dredging ladder, photographs	66	C. B. Laird, H. L. White, J. J. McFarland, W. A. Thalacker, S. G. Ford, C. B. Cochran, Joe Rynearson
Engineered Equipment, Inc.	Equipment for automation of new and existing plants	27	G. A. Loveall Sr., T. Loveall, L. Parker, S. Bender, J. McQueen
Engineering News-Record	Trade publication	75	
Flexible Steel Lacing Co.	20-ft. incline conveyor with 24-in. wide belt, fasteners and lacing, countersinking tools	57	F. Benson, B. Coats, E. Asbridge
Food Machinery & Chemical Corp. Florida Div.	All-steel casting forms	6	H. L. Clevenger, E. Kline, R. Davis
Forrer's Inc. A Div. of Spray-O-Bond Co.	Glaize, admixtures, cleaning compounds, etc.	56	E. A. Netzband, F. Forrer, R. Forrer, J. P. Kaysen, E. A. Green, R. Cahill
Fruehauf Trailer Co.	Pressure pneumatic and screw driven discharge bulk cement hauling equipment, new dump and platform units, other ready-mix equipment, photos	88	R. K. Morgan, J. Kostelnik, J. F. Gruca, C. Jacoby, H. Freeman, M. Warren
Gilson Screen Co.	New model portable hand- or motor-driven aggregates testing screen	61	C. F. Cody, et al.
Hardinge Company, Inc.	Working unit of new classifier complete with sand and water circulating system, literature, photos	60	A. J. Russell, W. H. Shank, J. D. Power, C. S. Horning, A. H. Renault, C. B. Brown, H. S. Downes
Hardy Scales Co.	Equipment data, photo display	47	
Harnischfeger Corp.	Adjustable electrical energy controls, hoist systems for electric shovels, demonstration unit	25	H. Harnischfeger, F. Hirner, J. Catalane, L. Flora, G. Raubach
HarriSteel Products Co.	Woven wire screen cloth	13	E. Gallaway, J. Dobson
Hendrick Manufacturing Co.	Perforated metal screens, perforated rubber clad screens, wedge slot, wedge wire units	44	T. A. Warner, B. G. Dann, W. B. Stoddard Jr., E. D. Schreckengost, R. F. Vandenberg, H. W. Snedeker, W. F. Kendrick, L. C. Cooley
Hewitt-Robins Inc.	Screens, conveyor components, speed reducers, shakeout, screencloth	10, 19	R. Lotz, E. Schuba, J. Martin, H. Ritmeester, H. Lautenschlaeger, W. Needham
The Howe Scale Co.	Automatic scale, automatic control, display scale	62	F. E. Pringle, J. S. Blackwell, L. Langevin, A. R. Haskins, et al.
Hoyt Wire Cloth Co.	Standard and special weaves of wire cloth for scalping, sizing and dewatering, smaller opening specifications, etc.	22	F. G. Hoyt, C. B. Eckert, W. J. Rebert, T. E. Schoelkopf, J. C. Schnur, H. Wiedman, R. K. Warner
Hydro-Dredge Accessory Co.	Suction hose, dredge sleeves, rubber-covered pulleys	52	A. A. Carter, A. Brueggemann
Iowa Manufacturing Company	Twin jaw crusher, photo display of entire line	4	K. Lindsay, Jr., K. F. Hamilton, N. H. Kessler, L. B. Blanchard, H. I. Hansen, K. V. Turner
Johns-Manville Corp. Celite Div.	Liquid retarder for concrete, liquid concrete admixture	73	D. R. MacPherson, H. C. Fischer, H. L. King, R. J. Amberg, J. C. Ropke, et al.
Kensington Steel Co.	Alloyed manganese steel repair and replacement parts for crushers and shovels, sand drag, cutters, elevator chain, elevator buckets, shovel treads and teeth, pulverizer hammers and grates, tractor sprocket rims and grouser plates	16	Leonard T. Harris, et al.
King Mfg. Corp.	A 3-drum dredge hoist	53	E. F. King, R. F. King, C. M. Shank
Leschen Wire Rope Div. H. K. Porter Co., Inc.	Display of high-strength stress-relieved strand for concrete prestressing	48	G. N. Dow, R. R. Hartup, K. F. Ewerhardt, et al.
Littleford Bros., Inc.	Equipment data, photo display	24	
Ludlow-Saylor Wire Cloth Co.	Samples of square opening and long opening wire screens, screens of stainless steel wire	36	J. F. Steffens, H. W. Betzold, M. E. Erbe
McLanahan & Stone Corp.	Models of hydraulic sand classifying tank valve, improved design sand screw washer-classifier, heavy duty log washer	35	J. C. McLanahan, R. H. Brown, R. F. Rumbaugh, A. D. Walter, J. G. Rigby
Manganese Steel Forge Co.	Wear parts and plate of new completely prehardened steel, and of standard work-hardening steel	32	H. C. Doepken, R. F. Moorehead, J. A. Webb Jr., et al.
Manitowoc Engineering Corp.	Working models, photographs, literature	59	E. N. Fors, H. B. Halloran, M. M. Fell, E. B. Nickles, R. VanDeHey, C. Umlandt, M. R. Stumm, J. T. Kamminski, et al
E. F. Marsh Engineering Co.	Tubular frame conveyors with wide frame and wide face pulleys	31	D. Marsh, et al.
Massey-Ferguson Industrial Div.	Models displaying instant reverse of tractors, scale models of shovel loader and tractor with loader and backhoe	87	M. E. Tuell, B. King, O. Dawson
The Master Builders Co.	Visual presentation and literature on Pozzolith applications and use in concrete	46	V. Andrews, et al.
W. R. Meadows, Inc.	Asphalt, fibre and cork expansion joints, rubber-asphalt joint sealing compounds, expandable vapor seal, etc.	29	R. G. Stilling, J. J. Sullivan, R. A. Cameron, J. H. Wallmuth, T. R. Johnson, H. G. Meadows

(Turn page)

EXHIBITOR	PRODUCTS SHOWN	BOOTH	EXHIBIT PERSONNEL
Memphis Equipment Co.	Army all-wheel drive trucks	90	D. Merritt
Motorola Communications & Electronics, Inc.	New model transistorized 2-way mobile radio equipment	5	F. Alexander, D. Larsen, et al.
National Conveyor & Supply Co.	Car shakers for aggregates, cement unloading	26	R. Wagner, R. Bauerle, R. Wagner Jr., R. Bauerle Jr.
Nordberg Manufacturing Co.	Scale models of crushing & screening equipment	37	D. A. Cheyette, J. B. Bond, J. D. Grace, J. H. Kobel, E. T. Daum, F. G. Ruder, E. F. Zillman
Northwest Engineering Co.	Photo display, equipment data	42	E. Windahl, H. Barkhausen, G. Williams, J. Stevens
Pettibone Mulliken Corp.	New 11,000-lb. capacity tractor shovel	63	J. M. Hume, E. Wegner, J. D. Brame
Pick Manufacturing Co.	Instantaneous steam injection hot water heater and various applications	51	O. L. Daily, A. Dawes, M. S. Nelson, A. H. Belouske, G. G. Partch, C. T. Brennan, E. H. Ronsick
Pioneer Engineering Div. of Poor & Co., Inc.	Portable screen unit	30	C. R. Rolf, A. J. Belanger, C. G. Sears, J. M. Brown, R. A. Johnson, et al.
Pit and Quarry	Trade publication	70	
Plant City Steel Corp.	Equipment data, photo display	69	
Productive Equipment Corp.	Base mounted screen	21	I. Lehman, et al.
Radio Corporation of America	2-way radio equipment, data on new units	55	
Richmond Screw Anchor Co., Inc.	Items representative of developments in concrete form tying including inserts for anchoring to concrete, literature	74	E. Trolio, W. Sels
Rocform Corporation	Concrete forms	9	D. Older, F. Pauli, J. Augugliaro, R. Freeman
Rock Products	Trade publication	84	
Rogers Iron Works Co.	Photo display, descriptive data on recently completed new designs	49	W. Henry, M. Lange, E. Spradlin
Sauerman Bros., Inc.	3-cu. yd. crescent dragscraper, slackline cableway hoist model, wire rope blocks, photos of installations	23	J. R. Dillon, W. R. Ellertson, J. H. Guilfoil, E. W. Lieb, R. A. Deane, A. W. Lambert, M. O. Martin
Screen Equipment Co., Inc.	Vibrating screen	1	N. J. Gleiser, C. S. Fielding
Servicised Products Corp.	Complete line rubber and polyvinyl waterstops, expansion joint, sealers, admixtures, concrete specialty items	12	L. Lay, S. Brown, J. Poole, J. Thill, T. Stanley, W. Swanson, W. Hagemeister
R. H. Sheppard Co., Inc.	Late model diesel engine with concrete mixer application	54	F. Ricketts, W. P. O'Connor, G. D. Long
Sika Chemical Corp.	Retarding densifier, accelerating densifier, epoxy compounds, literature	71	R. I. Geyer, et al.
Simplicity Engineering Co.	30-in. by 9-ft. feeder	38	R. Johnson, R. H. Clements, R. T. Gilbert, L. Lovett, B. Schmidt, G. Judson, A. C. M. DeSoto, H. M. Dodge, F. D. Barber, S. Holzman
Smith Engineering Works	Full size working unit of new horizontal, flat deck screen	40	D. Barnes, H. Schaper, et al.
A. O. Smith Corp. Permaglas Div.	Large capacity water heaters and glass-lined storage tanks for ready-mix concrete applications	3	D. Williams, D. Coon, L. Becker, K. O'Gorman, F. Waindle, et al.
Soiltest, Inc.	New model portable concrete tester 25,000-lb. capacity, new steel cadmium plated slump cone, Kelley ball for in-place slump tests of fresh portland cement concrete, pocket penetrometer for soils classification	7	E. E. Brush, J. R. Haverkos, S. Thompson
The Solvay Process Div. Allied Chemical Corp.	Calcium chloride display and data	2	R. Lovatt, C. D. Jordan, D. Burns, D. Rider
Spancrete Div., West Allis Concrete Products	Literature, process photo display	82	E. Wakefield, W. Smeaton
R. L. Spillman Co.	Basic forms for precast concrete products, non-skid surface diamond step stone form, electric vibrator tables, etc.	18	W. Coons, C. Meyers
Stedman Foundry & Machine Co., Inc.	Working model of disintegrators	33	W. E. Schaffnit, R. P. Holderbaum, J. Schnur, W. Shoemaker, A. Mills, R. O. Carlson, B. Maples, H. R. Kruger, P. Perrine, L. A. Rhodes
Stephens-Adamson Manufacturing Co.	Bulk materials handling equipment	14	W. Cousland, R. Humm, J. Strecker, J. Brewer, D. Ellertson
Symons Clamp and Mfg. Co.	Steel-ply forms for light and heavy construction, steel trench forms for light construction, stoop or wing wall form for residential construction	50	
Taylor-Wharton Co.	Crusher replacement parts, chain, weldments, tractor repair parts, sprockets, misc. manganese steel items	67	D. M. Horner, R. Herold, P. J. Porter, J. P. Reynolds, A. L. Bray, R. A. Curry, D. W. Hageman, H. B. McDermott, T. F. Murray, R. L. Cawley, J. McLaughlin, G E. Alpaugh
The Thew Shovel Co.	2-cu. yd. front-end loader, photos, literature on complete shovel and crane line	43	G. E. Gunther, F. J. Broad, H. D. Schaller, J. D. Zook, C. S. Weber
The W. S. Tyler Co.	Vibrating screen, sieve shaker, testing sieves, wire cloth samples	34	W. W. King, H. F. Lawrence, J. Sullivan, I. Dian, et al.
The Universal Engineering Corp.	New horizontal 3-deck leafless, springless screen; stabilization plant; scale operating portable plant; feeder	63	H. J. Knudten, D. R. Conway, A. K. Holets, A. B. Hanse, J. P. Heihn, et al.

EXHIBITOR	PRODUCTS SHOWN	BOOTH	EXHIBIT PERSONNEL
Harry Warde & Co., Inc.	Cementing and bonding compounds, cleaning compounds	81	W. D. Ellwyn, W. R. Whisenhunt Jr., E. Cline, E. R. Fauth, D. Sparks, J. Stevenson, H. Warde
The S. K. Wellman Co.	Equipment data, product display	15	
Werco Steel Co.	New model 6-ft. impact crusher; display of jaws, rolls, pulverizer parts, perforated plate	8	T. Bridgewater, D. Massey, et al.

Natl. Crushed Stone Assn. Convention Program

Conrad Hilton Hotel, Chicago, Ill., Feb. 22-24, 1960

SUNDAY, FEBRUARY 21

8:30-5:30—Registration — Exposition hall foyer
Information and tickets—3rd floor corridor

Morning

10:00—Meeting of Manufacturers Division Board of Directors—Waldorf Room

Afternoon

2:30—Meeting of N.C.S.A. Board of Directors—Waldorf Room

MONDAY, FEBRUARY 22

8:30-5:30—Registration — Exposition hall foyer
8:30-12:30—Information and tickets — 3rd floor corridor
12:30-5:30—Information and tickets—Exposition hall foyer

Morning Session
Waldorf Room

W. C. Rowe, president N.C.S.A. (president, Rowe Contracting Co., Malden, Mass.) presiding
9:30—Motion picture
10:00—Greetings from the president
10:10—N.C.S.A. In Action (Staff reports)
10:50—Premiere showing of new N.C.S.A. film—"Graded Aggregate Base Course Construction"
11:20—"Cave Man to Space Man"—J. Lewis Powell, Alexandria, Va.
12:00—Adjournment—Visit the exposition

GREETING LUNCHEON
Grand Ballroom
12:30

O. E. Benson, president, General Crushed Stone Co., Easton, Pa., presiding
Introduction of new officers and executive committee
Presentation of N.C.S.A. safety contest awards—H. H. Kirwin, chairman, N.C.S.A. Accident Prevention Committee; treasurer, Eastern Rock Products Co., Utica, N. Y.
"What's the Use?"—Paul Jones, director of public information, National Safety Council, Chicago, Ill.

Afternoon Session

2:30-5:00—Inspection of Manufacturers Division Exposition—Lower level

Evening

6:00-7:00—Cocktail hour
Williford Room

TUESDAY, FEBRUARY 23

8:30-5:30—Registration — Exposition hall foyer
Information and tickets—3rd floor corridor

Morning Session
Grand Ballroom
Operating Men and Equipment Manufacturers

Montagu Hankin Jr., executive vice-president, Houdaille Construction Materials, Inc., Division of Houdaille Industries, Inc., Morristown, N. J., presiding
8:30—"Growing Pains"—Sound color motion picture through courtesy of the Portland Cement Association, Chicago, Ill.
9:00—"Latest in Plant Design for Large Volume Production"—Don Wendling, vice-president sales, Vulcan Materials Co., Chicago, Ill.
9:20—Discussion
9:30—"Primary Quarry Drilling"—W. Julian Parton, vice-president operations, General Crushed Stone Co., Easton, Pa.
9:50—Discussion
10.00—Coffee break
10:15—"Building Up Concaves of Gyratory Crushers With Preformed Steel"—A. J. DeMarchi, superintendent, Canada Crushed and Cut Stone Ltd., Hamilton, Ontario, Canada
10:35—Discussion
10:45—"In-Plant Storage"—Panel Discussion
Discussion leaders: R. T. Lassiter, New York district manager, Western-Knapp Engineering Co., New York, N. Y.; E. L. Heidenreich Jr., consulting engineer, Heidenreich, E. Lee, Jr., Newburgh, N. Y.; R. C. Meissner, vice-president, Meissner Engineers, Inc., Chicago, Ill.
11:30—Adjournment

Luncheon Session for Executives
Astoria Room
12:30-2:30

John F. Lane, Lane and Howe, Washington, D. C., General Counsel, National Crushed Stone Association, presiding
Discussion of federal laws and legislation of significant interest to crushed stone producers

Manufacturers Division Luncheon
(For members of the Manufacturers Division only)
Williford Room
12:30-2:00

Afternoon Session
Waldorf Room

Presiding officer to be announced
3:00—"Bureau of Mines Program for the Investigation of Damage Caused by Ground and Air Borne Vibrations from Quarry Blasting"—Dr. Leonard Obert, chief, Applied Physics Laboratory, U. S. Bureau of Mines, Region V, Eastern Experiment Station, College Park, Md.
3:20—Discussion
3:30—"Visual Perception"—Sound color motion picture
4:00—"Control of Air Blast Effect Resulting from Blasting Operations"—J. R. Kringel, vice-president production, New York Trap Rock Corp., West Nyack, N. Y.
4:20—Discussion
4:30—"Politics is Your Business"—Speaker to be announced
5:00—Adjournment—Visit the exposition

Evening
Open for individual plans

WEDNESDAY, FEBRUARY 24

8:30-12:30—Registration — Exposition hall lobby
Information and tickets—Exposition hall lobby
12:30-5:30—Information and tickets—3rd floor corridor

Morning Session
Inspection of Manufacturers Division Exposition
Lower level
9:00-12:00

GENERAL LUNCHEON
Grand Ballroom
12:30

George D. Lott Jr., president, Palmetto Quarries Co., Columbia, S. C., presiding
"Shall We Survive"—Dr. Nicholas Nyaradi, director, Institute of International Studies, and former Minister of Finance in the Hungarian Cabinet

Afternoon Session
Waldorf Room

Presiding officer to be announced
2:30—"Modern Ballasting Practices"—J. P. Datesman, process engineer, Chicago & North Western Railway Co., Chicago, Ill.
3:00—"Highways and the National Economy"—Ellis Armstrong, commissioner, Bureau of Public Roads, Washington, D. C.
3:30—"Evaluating Quality Requirements for Aggregates"—F. V. Reagel, engineer of materials, Missouri State Highway Commission, Jefferson City, Mo.
4:00—"Nothing is Wrong With Me—Everyone Else is Crazy"—Dr. B. G. Gross, executive secretary, Northtown Industrial Management Club, Chicago, Ill.

Evening
Dinner, Entertainment, Dancing
Grand Ballroom
6:00-11:00

Exhibits in Conrad Hilton Hotel

N.C.S.A. Manufacturers Division

EXHIBITOR	PRODUCTS SHOWN	BOOTH	EXHIBIT PERSONNEL
Allis-Chalmers Mfg. Co.	Cone crusher, pumps, motors, controls, screen	77	F. E. Briber, A. L. Stewart, A. K. Boszhardt, W. Dannenbrink, T. A. Oberhellman, et al.
Allison Div. General Motors Corp.	Medium and heavy-duty fully automatic truck transmissions, front-end loader transmissions		J. K. Knighton, A. R. Schuette, E. H. Scheiwe, E. W. Smith
American Cyanamid Co. Explosives & Mining Chemicals Dept.	Dynamite, electric blasting caps, blasting supplies, flocculants for clarification of settling pond overflow or removal of washing plant slimes from waste water by settling or filtration	46	M. C. Behre, J. R. Burkett, E. C. Farrar, P. Furgerson, F. A. Griffin, R. K. Harter, G. C. Holton, F. H. Lowe, J. C. O'Neal
American Manganese Steel Div. American Brake Shoe Co.	1½-cu. yd. lightweight all-cast manganese steel dipper, 2-part tooth, crusher parts, hardfacing welding rod	2	J. A. Brandenburg, W. E. Crocombe Jr., F. B. Falvey, R. F. Kelley Jr., N. M. McGuire
Atlas Powder Co.	New pelleted form of ammonium nitrate, also new primers and premixes	80	W. E. Collins, M. D. Caldwell, W. W. Caldwell, W. R. Law, J. F. Flippo, G. W. Thompson, J. L. Romig, E. A. Ray, M. A. McDuff, J. W. Cochran, D. M. McFarland, J. H. Dannenberg
Austin Powder Co.	Detonating fuse, new nitrate explosive, aluminum tamping poles	17	B. J. Calder Sr., B. J. Calder Jr., D. M. Gleason, R. N. Prescott, C. L. Hughes, L. F. O'Donohoe, C. Ziegler
Baldwin-Lima-Hamilton Corp. Construction Equip. Div.	20-ft. display unit with shovel set amid 7-ft. curved crushed stone operation mural	57	J. Hardesty, J. Moore, M. Pierce, J. Watson, A. Bellows, J. Rothe, H. Hesse, P. Hawkinberry, J. McPheron, F. Murphy, J. Cornwall, C. Alumbaugh, S. Kreher
Barber-Greene Co.	Scale models conveyor installations and bulk handling techniques, photo murals	6	H. Newton, E. Fauth, C. Coon, P. Hanson, M. Hnatiuk, O. Orland, F. Bernard, et al.
Brunner & Lay Rock Bit of Asheville, Inc.	Drill steel, drill steel accessories, rock bits	67	B. Rogers, C. Patton, J. Neamand, J. Klemeyer, W. Chapin
Bucyrus-Erie Co.	Photo display, equipment data	1	G. Grayer, H. Freyensee, et al.
Cape Ann Anchor & Forge Co.	4 models forged steel drop balls, literature, photos	16	A. H. Nutton
Caterpillar Tractor Co.	Tractor shovel with side dump bucket, heavy-duty diesel engine	70	K. F. Ames, R. D. Evans, J. J. Keyes, W. A. Haley, J. H. Reeves
Chain Belt Co.		4	
Clark Equipment Co.	Tractor shovel, tractor dozer	5	A. York, W. Richards, C. Kennedy, C. Ellis, F. Reach, D. Burnett, J. Horton, R. Beck, J. Dorfler
Contractors and Engineers Magazine	Trade publication	12	
Cross Perforated Metals Plant National-Standard Co.	Hexagonal, round, square, and slotted opening screencloth; new wedgewire and perforated sheet screening surfaces	43	S. Fulkerson, G. Day, D. Coleman, R. Coxey, C. Lloyd, G. Tench, E. Weaver, et al.
Cummins Engine Co., Inc.	Cut-away models 130- to 600-hp. engines, torque converter unit	76	C. Boll, G. Bego, C. Martin, B. Sears, J. Morgan, T. Paxton
Deister Machine Co.	Vibrating screen	64	I. F. Deister, E. Deister Jr., I. F. Deister Jr.
Diamond Iron Works Div. Goodman Mfg. Co.	Section of wire rope frame conveyor	9	C. E. Hanson, B. J. Kastein, D. R. Freeberg, J. H. Harrigan Jr., J. A. Hart
Drill Carrier Corp.	Literature, photos, product display	74	
Du Pont, E. I. de Nemours & Co.	Blasting problem data, handbooks, literature	32	B. R. Maloney, S. G. Cathrall, R. Crumbaugh, H. Poel, et al.
Eagle Iron Works	Breaker balls, log washers, photographic presentation of equipment and installations	85	C. B. Laird, H. L. White, S. G. Ford
Easton Car & Construction Co.	Literature and photos covering off-highway equipment, data on new variable wheel base rear dump trailers for use with tractors	14	G. Fraunfelder, et al.
Electric Steel Foundry Co.	Points and adapters for dragline, shovel, and hoe buckets; renewable head hammers for hammermills	47	T. Kirby, E. Berger, J. Good, N. Grubb, et al.
Frog, Switch & Mfg. Co.	Product data display	42	W. A. McGrath, V. N. Seals, F. E. Smith, J. Winton, R. M. Murdock Jr.
Hardinge Company	Working unit of new overdrain belt-type wet classifier complete with sand and water circulating system	73	R. Russell, W. Shank, C. Brown, H. Downes, et al.
Harnischfeger Corp.	Adjustable electrical energy controls, shovel hoist systems, demonstration unit	8	H. Harnischfeger, F. Hirner, J. Catalane, L. Flora, G. Raubach
HarriSteel Products Co.	Abrasion resisting woven wire screen cloth	35	E. Gallaway, J. Dobson

EXHIBITOR	PRODUCTS SHOWN	BOOTH	EXHIBIT PERSONNEL
Hendrick Mfg. Co.	Perforated metal screens, perforated rubber clad screens, wedge slot screens, wedge wire screens	63	J. J. Risco, K. H. Colville Jr., D. McM. Blackburn, R. F. Vandenberg, D. Buchanan, H. E. Baker, W. F. Kendrick, L. C. Cooley
Hercules Powder Co.	Technical data, photo display, literature	65	
Hewitt-Robins Incorporated	Trackside shakeout, 20-ft. rope stringer, rubber spiral idlers, wire rope type idlers, screencloth, gearmotors, speed reducers, pillow blocks	25, 40	H. Ritmeester, R. Lotz, H. Lautenschlager, W. Needham, E. Schuba, J. Martin, et al.
Hoyt Wire Cloth Co.	Standard and special weaves of wire cloth for scalping, sizing and dewatering, edge preparation examples	84	F. G. Hoyt, C. B. Eckert, W. J. Rebert, T. E. Schoelkopf, J. C. Schnur, H. Wiedman, R. K. Warner
Hughes Tool Co.	Tricone rotary rock bits	3	L. B. Stinson, R. M. Goolsbay, S. B. Plummer Jr., J. J. Brand, J. A. Forrest, R. E. Price, C. L. Scott
Ingersoll-Rand Company	Illustrations and data on new 4- to 6½-in. dual-purpose self-propelled drill, compressors, range of drills and bits, auxiliary equipment	78	
International Harvester Co. Construction Equipment Div.	Late model engine	34	C. E. Jones, R. M. McKiel, J. Cranston, P. D. Evans, W. M. Holland, R. G. Greer
Iowa Mfg. Co.	Twin jaw crusher, mixer display	27	K. Lindsay Jr., K. F. Hamilton, N. H. Kesler, L. B. Blanchard, H. I. Hansen, K. V. Turner
Jaeger Machine Co.	Compressors, pumps, cut-away units	49	A. Thomas, W. Berry, et al.
Jeffrey Mfg. Co.	Combination junior pulverizer and feeder with amp. demand controls	28	J. C. Price Taylor, R. W. Volz, E. W. Sickmeyer
Joy Mfg. Co.	New dual rotation drill that couples and uncouples drillsteel without hammering, designed for extra rotation power for drilling in tight rock formations, catenary suspended conveyor belt idlers	71	A. J. Lee, H. E. Butters, C. D. Smith, C. W. Miller, R. R. Leonard, J. C. Curtis, R. E. McConnell, M. L. McCombs, J. R. Steffen, G. Bergman, W. Hanson
Kennedy-Van Saun Mfg. & Eng. Corp.	Photos and data on 60x72 impactor, base-mounted screen, 42x48 overhead eccentric jaw crusher, scrubber, air-swept milling system, roll crusher	72	E. Herschelman, H. Behr, F. Borgeson
Kensington Steel Div. of Poor & Co., Inc.	Alloyed manganese steel repair and replacement parts for crushers, shovels, etc.; sand drag, cutter, elevator chain, elevator buckets, shovel treads and teeth, pulverizer hammers and grates, tractor sprocket rims and grouser plates	37	L. T. Harris, et al.
Koehring Division Koehring Co.	Full-revolving, crawler-mounted front-end loader	75	E. Gorgee, K. Chandler, W. Dickerson, C. Andresen, L. Meyer, A. Cossens, P. Cunningham, E. Goes, M. Jaeger, et al.
Ludlow-Saylor Wire Cloth Co.	Samples of square and rectangular opening oil-tempered wire cloth, stainless steel cloth	60	J. F. Steffens, H. W. Betzold, M. E. Erbe
Mack Trucks, Inc.	Cutaway working models of diesel engine, 20-speed transmission, power divider, etc.	69	T. H. Jones, T. J. Zeller, W. May, A. G. Crockett, J. Walker, R. D. Peo, R. J. Meinert, E. Brunner, D. M. Sunderland, C. E. Hallock

(Turn page)

BOOTH DIAGRAM

1960 MANUFACTURERS DIVISION EXPOSITION

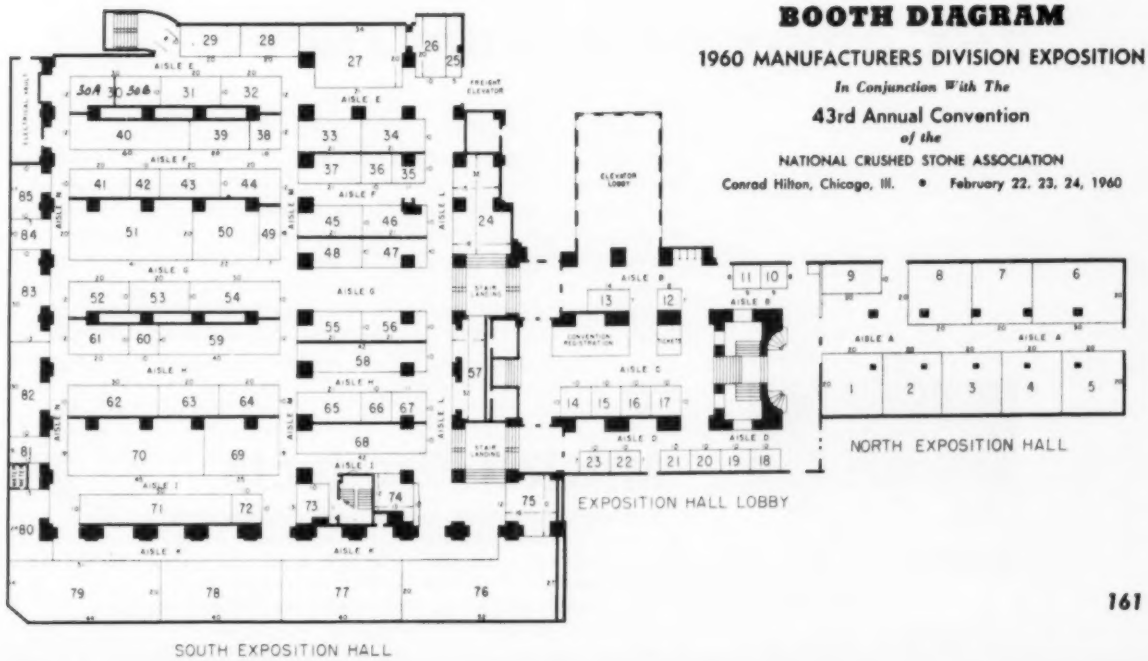
In Conjunction With The

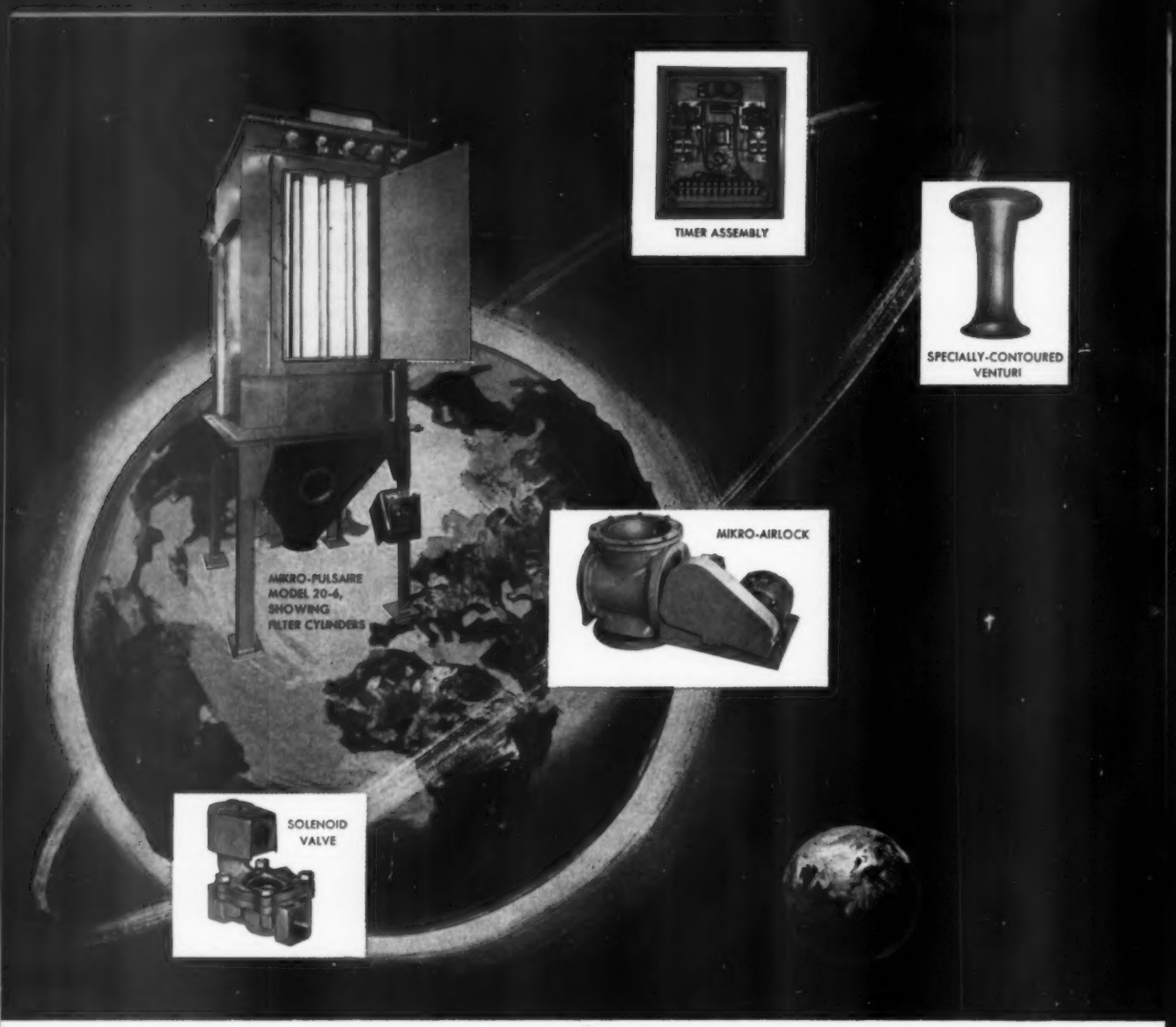
43rd Annual Convention

of the

NATIONAL CRUSHED STONE ASSOCIATION

Conrad Hilton, Chicago, Ill. • February 22, 23, 24, 1960

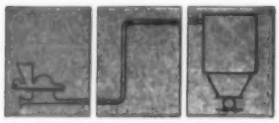




THE ORBIT OF ACCEPTANCE . . .

It's still young enough to be called "new" . . . but the MIKRO-PULSAIRE Collector is actually a veteran that's proving itself on nuisance dust and air pollution control jobs all over the world. If you're looking for assurance of around-the-clock recovery with constant low differential pressure, full-time automatic cleaning and absolute minimum maintenance, you'll find it in the MIKRO-PULSAIRE! It's a simplified unit, as the basic components above will show you . . . and yet it delivers a filtering efficiency of 99.9% plus on a wide variety of harmful or noxious dusts. Engineered for economy, the exclusive Mikro jet-action principle eliminates gears, cams, chains and other high replacement-cost parts inside the housing, and guarantees longer bag life, as well. There's a MIKRO-PULSAIRE for every nuisance dust problem, including new modular construction units with capacities from 20 cfm to any known requirement. Bulletin 52A, which is yours for the asking, tells the complete story.

PROCESSING SYSTEMS



GRINDING CONVEYING COLLECTING

MIKRO-Products

SPAN THE GLOBE

Pulverizing Machinery Division • Metals Disintegrating Company, Inc.
3 Chatham Road • Summit, New Jersey

REPRESENTATIVES throughout the United States, Continental Europe, British Isles, Canada, Mexico, Central and South America, West Indies, South Africa, India, Japan, Philippines, Australia and New Zealand.

MANUFACTURING FACILITIES: United States, Canada, Continental Europe, British Isles.

EXHIBITOR	PRODUCTS SHOWN	BOOTH	EXHIBIT PERSONNEL
Manganese Steel Forge Co.	Wear parts and plate of new completely prehardened steel, and of standard work-hardening steel	52	H. C. Doepken, J. A. Webb Jr., et al.
Marion Power Shovel Co. Division of Universal Marion Corp.	Working model of shovel, pictorial display	39	A. F. Busick Jr., M. V. Cornell, D. Reich, M. Geller, R. Kerr, L. C. Mosley, G. Boulter, D. B. Reed Jr., E. Marinik, G. Moritz, L. E. Schaffer, J. Forgy, M. S. Pohler, T. F. Purcell
E. F. Marsh Engineering Co.	Tubular frame conveyor components featuring wider frame, wider face pulleys	83	D. Marsh, et al.
Mayhew Supply Co., Inc.	New rotary type, self propelled, one-man operated blast-hole drill, bit grinders	36	N. W. Fishback, C. P. Weaver, J. W. Kellam, J. T. May
McLanahan & Stone Corp.	Models of automatic hydraulic sand classifying tank valve, improved design sand screw washer-classifier, heavy duty log washer	61	J. C. Mclanahan, R. H. Brown, R. F. Rumbaugh, A. D. Walter, J. G. Rigby
Murphy Diesel Co.	Display of engines, power units, generator sets; background exhibit of field installations	68	P. Schnetzky, L. Delaney, G. Gauger, J. Vogler, G. Anderson
Nordberg Mfg. Co.	Scale models of crushing and screening equipment including cone crusher, bar grizzly, rod grizzly, Type F screen, rod deck screen, V-screen	59	D. A. Cheyette, J. B. Bond, K. S. Block, R. C. Meaders, E. F. Zillman, W. J. Hetzel, P. C. Friend
The Northern Blower Co.	Pictorial display of dust collecting equipment with special attention to automatic bag type dust arresters	15	L. A. Eiben, H. E. Hoon Jr.
Northwest Engineering Co.	Literature, photos of shovels, cranes, draglines	82	E. R. Windahl, H. N. Barkhausen, G. C. Williams, J. E. Stevens
Olin Mathieson Chemical Corp. Explosives Div.	Blasting agents and recently developed primer	48	J. L. Wetzel, L. F. Baity, John Clark III, J. K. O'Hare, W. Askew, W. G. H. Latham, H. D. Watts, R. V. Venker, et al.
Pioneer Engineering Div. of Poor & Co., Inc.	Portable screen unit, display	24	C. R. Rolf, A. J. Belanger, C. G. Sears, J. M. Brown, R. A. Johnson, et al.
Pit and Quarry	Trade publication	11	
Productive Equipment Corp.	Multi-deck base mounted screen	44	I. Lehman, et al.
REICHdrill Div. Chicago Pneumatic Tool Co.	General display, information relative to rotary and percussion drilling equipment	30	W. Reich, C. Bush, G. Davis, J. Hughes
Rock Products	Trade publication	13	
Rogers Iron Works Co.	Photo display, descriptive data on recently completed new designs	81	W. Henry, M. Lange, E. Spradlin
Schramm, Inc.	Drilling equipment and accessories, bottom-hole drilling units, action photos	38	C. L. Metzger, N. L. Kirk, R. E. Hearl, R. A. Bert
Screen Equipment Co., Inc.	Vibrating screen	29	N. J. Gleiser, C. S. Fielding
Simplicity Engineering Co.	30-in. by 9-ft. feeder	55	R. Johnson, R. H. Clements, R. T. Gilbert, L. Lovett, B. Schmidt, G. Judson, A. C. M. DeSoto, M. H. Dodge, F. D. Barber, S. Holzman
Smith Engineering Works	Full size working unit of new horizontal, flat deck screen	58	D. Barnes, H. Schaper, et al.
Stedman Foundry & Machine Co., Inc.	Working model of disintegrators, photos	53	H. R. Kreuger, P. Perrine, L. A. Rhodes
Stephens-Adamson Mfg. Co.	Bulk materials handling equipment	33	W. Cousland, R. Humm, J. Strecker, J. Brewer, D. Ellertson
Taylor-Wharton Co. Div. Harsco Corp.	Crusher replacement parts, chain, weldments, tractor repair parts, sprockets, miscellaneous manganese steel items	7	D. M. Horner, R. Herold, P. J. Porter, J. P. Reynolds, A. L. Bray, R. A. Curry, D. W. Hageman, H. B. McDermott, T. F. Murray, R. L. Cawley, J. McLaughlin, G. E. Alpaugh
Thew Shovel Co.	2-cu. yd. front-end loader, photos, literature on complete line of shovels and cranes	62	G. E. Gunther, F. J. Broad, H. D. Schaller, J. D. Zook, C. S. Weber
Thor Power Tool Co.	Crawler-mounted drill, tugger hoist, paving breakers, generators, concrete placing equipment	50	B. Johns Jr., W. Miller, M. Sorenson, K. Nelson, F. Householder, E. Slason
Torrington Co. Bantam Bearings Div.	All principle types of anti-friction bearings manufactured by company, including self-aligning spherical roller bearings, etc.	41	J. H. Williams, J. N. Wholean, J. A. Sarka, W. M. Walker, J. Hayvaert, R. Peterson, R. A. Ramsay, G. E. Marvel
Traylor Engineering & Manufacturing Co.	4x5 jaw crusher, gyratory crusher size 2½-in. opening; literature and photos on ball, rod, and tube mills, apron feeders	56	C. H. Roberts, D. J. Kramm, S. Ekerovich, L. Weddle
W. S. Tyler Co.	Vibrating screen, sieve shaker, testing sieves, wire cloth samples	54	W. W. King, H. Lawrence, J. Sullivan, I. Dian, et al.
Universal Engineering Corp. Sub. of Pettibone-Mulliken Corp.	New horizontal 3-deck leafless, springless screen; stabilization plant, operating model portable plant, feeder	79	H. J. Knudten, D. R. Conway, A. K. Holets, A. B. Hanse, J. P. Heihn, et al.
Werco Steel Co.	New 6-ft. model impact crusher, jaw, roll, pulverizer parts, perforated plate	31	T. Bridgewater, D. Massey, et al.
White Motor Co. Autocar Div.	New medium weight chassis, tandem dump unit	51	J. N. Bauman, H. J. Nave, H. D. Weller Jr., K. A. Roesch, W. Mason, et al.
Wickwire Spencer Steel Div. Colo. Fuel & Iron Co.	Space screen sections, super-tempered and stainless steel wire rope	66	R. W. Ramer, E. P. Schmal, J. M. Redington, R. P. Pingeton
Williams Patent Crusher & Pulverizer Co.	Crusher, working model of mechanical air separator, pictorial display of roller mill and other equipment	45	R. F. Schneider, A. L. Braun, E. M. Carson, E. Jueckstock, R. Williams, J. Law

← Enter 162 on card, page 241

Slag Producers

Center Attention on

reduced supplies of slag
new specialized uses
status in specifications
association business

By WALTER E. TRAUFFER

ANOTHER ON THE SPOT REPORT

THE 42nd annual meeting of the National Slag Association at the Boca Raton Hotel and Club, Boca Raton, Fla., on October 29 and 30, 1959, was held far from any area of steel and slag production. But the steel strike and its effect on slag production and markets was a dominant subject of discussion. Apparently, slag production for 1959 will be down only slightly from 1958, but only because of reserves of raw slag, which are now seriously depleted. Much consideration was given to the development of special uses for which slag's special qualities make it particularly suitable.

Charles W. Ireland (Vulcan Materials Co.), president of N.S.A. presided over the meetings. Thursday, October 29, was devoted to the annual business and technical reports of staff members, and to a round-table discussion of industry matters. On Friday, October 30, committee reports and matters of association business were discussed.

Officers of N.S.A. who will serve for 1960 include the following: Charles W. Ireland, president (re-elected); Edward C. Levy, vice-president; W. S. Shaw, treasurer; E. W. Bauman, managing director and secretary (re-appointed); and Don W. Lewis, chief engineer.

The exective committee consists of the president, vice-president, managing director, and four members at large. The latter are C. A. Barinowski, R. D. Margesson, Stewart H. Steffey, and A. W. Wood. Messrs. Margesson and Steffey are new members at large.

The 1960 annual meeting will be held in Washington, D. C., during the early part of November.

President's Address In his opening address president Charles W. Ireland pointed out some of the problems facing the slag industry. This industry has grown through the years. In 1900 production of all aggregates was about 30 million tons, and in 1958 slag production alone reached that total. He gave credit to the industry and the association for helping to develop markets for the entire output of slag. The industry is now faced with the possibility of diminishing supplies but it also has more opportunities than ever before. The future of the industry, Mr. Ireland emphasized, lies in the many unique characteristics of slag which make it suitable for a wide variety of special applications. Highway departments, for example, are willing to pay more for its safety features. The ice control market is also a natural for slag, according to Mr. Ireland, perhaps in combination with salt brines. The development of such markets, he said, is up to the producers.

Harris N. Snyder (Buffalo Slag Co., Inc.) congratulating Edward C. Levy (Edward C. Levy Co.), at left, who succeeded him as vice-president of the National Slag Assn. Looking on are Charles W. Ireland (Vulcan Materials Co.), president of N.S.A., and W. S. Shaw, treasurer.

Managing Director According to E. W. Bauman, managing director of N.S.A., the steel strike has made it unlikely that 1959 output will equal that of the previous year. The existence of large reserves of raw slag in the form of old slag banks prevented any serious drop in production, but these reserves are now practically depleted, making the industry more and more dependent on current output from the mills. The production of expanded slag was more seriously affected because it is dependent on molten slag as source material. This limitation on production, Mr. Bauman suggested, might make it advisable to emphasize more heavily the

use of slag as a blend with other aggregates for various uses.

As a result of the association's efforts, slag is gaining wider recognition in specifications. Most specifications, both national and local, now include slag as an acceptable aggregate. But a serious handicap remains, said Mr. Bauman, because slag is normally lighter in weight than natural aggregates, for a given volume. When specifications or contract proposal forms use the weight basis, slag is placed at a competitive disadvantage. He advised alertness, not only to correct this situation where it exists, but also for proper adjustment at the time new specifications are drafted. Mr. Bauman also described efforts to improve specifications with respect to slag.

The association in 1959 increased the number and quality of its releases. The ten releases issued covered a wide range of uses and applications for slag, its properties, etc. The amount of advertising done, he feels, is still rather modest, especially when compared to that done by some member companies.

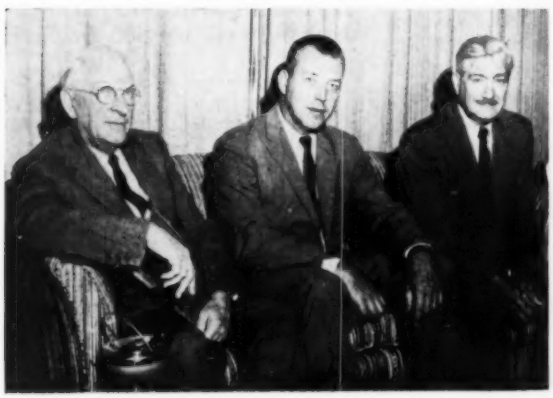
Results of the N.S.A. Inter-plant Safety Contest were reviewed by Mr. Bauman. The winners were Bethlehem Steel Company's Foam Slag Plant in Class A; and the Detroit Hard Slag Plant No. 1 of the Edward C. Levy Co. for Class B. The contest period has in the past corresponded with N.S.A. fiscal year —April through March. Beginning with 1959, the contest will be for the calendar year. In 1959 the U.S. Bureau of Mines included slag processors in an industry survey covering work-injury and employment data. The slag competition is an interplant contest, while the survey will permit comparison of safety statistics for slag plants with those of other allied mineral industries. Mr. Bauman also emphasized the importance to members of the annual industry survey, which is conducted in co-operation with the Bureau of Mines.

The steel company representatives at this meeting were, left to right: H. T. McIlwain (Bethlehem Steel Co.); Stewart H. Steffey (U.S. Steel Co.), a new member of the executive committee; and Fred Osborne (U.S. Pipe and Foundry Co.).

Research Director In his annual report, Fred Hubbard, director of research for N.S.A., described the relatively few but important investigations made; some have been completed, some are still active, and others are about to be undertaken. One, on volume change in concrete masonry units, was made in co-operation with several other organizations, and included all common types of aggregates. Results showed that expanded-slag autoclave units have very low and satisfactory shrinkage values and low-pressure steam-cured units are well inside limits. Reports from six outside laboratories indicated definitely that there is no harmful reactivity between slag and high-alkali cements.

According to Mr. Hubbard, the first phase of an investigation on resistance of slag to freezing and thawing indicated which of five freeze-thaw tests would be most practical for further studies. A study has just been completed on the relationship between the chemical composition and physical characteristics of slag. Definite trends, are hard to find, he

Committee chairmen, left to right: Harris N. Snyder, Budget and Finance; Walter B. Evans (American Materials Corp.), Advertising and Publicity; and C. A. Barinowski (Vulcan Materials Co.), Research and Product Development.



Staff members of N.S.A. include (left to right): Fred Hubbard (Midland Slag Co.), director of research; D. W. Lewis, chief engineer; and E. W. Bauman, managing director. On the board are some of the many association publications of 1959.

This group at one of the business meetings represented nearly every N.S.A. member company.

said, but these over-all studies will help to establish over-all relationships.

A limited laboratory study was made on the practicability of using expanded slag in the construction of bituminous concrete pavement surfaces for bridge floors; a limited market is indicated.

Experimental work is being carried on with slag sand and slag coarse aggregate used in concrete to resist the extreme heat of the exhaust from jet planes.

Engineers' Report D. W. Lewis, chief engineer of N.S.A., reported on his many varied activities during the year. As secretary of the Technical Committee, he has worked closely with the N.S.A. Research Laboratory. Current assignments concerned with N.S.A. research projects include preparation of a summary report on bituminous concrete mixes and a comprehensive report to cover both laboratory and field studies of open-hearth slag and its uses.

Mr. Lewis also described his work with various national technical societies and as a member of their committees. One, Subcommittee III-f of C-9 of A.S.T.M., recently had its scope enlarged to include not only specifications and tests for lightweight aggregates, but also test methods for lightweight concretes.

Plans of Committee C-15 to revise completely the specifications for concrete masonry units, he said, has led to an extensive investigation of slag block in the N.S.A. laboratory. Data on the properties of slag units will make it possible to evaluate the effect on them of any specification changes which may be proposed. Co-operative shrinkage tests on concrete block sponsored by A.C.I. Committees 213 and 716 have been completed, and a final report will soon be ready. The perfomance of autoclaved expanded-slag units was particularly outstanding.

Contracts with federal agencies concerned with aggregate research and specifications have resulted in opportunities to get slag included in that series, either planned or under way. Among these were tests on the following: (1) resistance of concrete to jet blast, by the National Bureau of Standards; (2) shrinkage of concrete masonry, also by N.B.S.; (3) freeze-thaw durability of aggregates, by the Bureau of Public Roads; (4) strength and durability of lightweight aggregates and concretes, N.B.S.; and (5) bituminous concrete mix design and testing procedures, N.B.S.

$16,000,000 Plant Opened To Produce Superphosphate

A $16,000,000 phosphate fertilizer production facility of Central Farmers Fertilizer Company was recently dedicated at Georgetown Canyon (near Montpelier), Idaho. Annual output will run around 140,000 tons of "high analysis" (53-55 percent) superphosphates for agricultural uses; the plant is reportedly the only such facility in the United States (outside of the Tennessee Valley Authority) to use elemental phosphorus.

Its 35,000-kilowatt elemental furnace is reportedly one of the largest in the nation—but expansion is contemplated by enlarging furnace capacity. Because of the 8,100-ft. elevation, the open-pit mine is worked only from mid-May to the end of September. Ore is moved by a mile-long gravity conveyor belt from the mine to the plant; it is stockpiled for feed to the phosphatic reduction facilities, which operate 24 hours a day, 7 days a week.

Central Farmers Fertilizer Co. is owned by the National Farm Bureau Federation and farm co-operative associations extending from the state of Washington to the Midwest. The firm is also studying future production of a calcium metaphosphate.

Three Kimmell, Ind., firms recently changed hands: Kimmell Aggregate Corporation and Kimmell Readi-Mix and Materials were purchased for $87,000 by Wolcottville Sand and Gravel Corporation of Wolcottville, Ind. The May Rental Corporation of Fort Wayne bought Holiday Gravel Corporation (an affiliate of the Kimmell ready-mix and gravel firms) for $109,000.

The tax effect of depreciation*

Three methods of computing depreciation of plant equipment evaluated

ANY tax deduction is a thing to cherish at filing time for it has the effect of reducing your taxable income, but there are a few deductible items that have the rather special characteristic of flexibility. One of these is the deduction you are allowed for depreciation.

For example, let's say that the total amount you are allowed for depreciation of a particular machine is $5,500, which is to be deducted over the ten-year period you have estimated as the useful life of the machine. Your deduction in the first year may be as low as $550, or it may be as high as $2,160. The amount you decide to deduct will certainly have an effect on your taxable profits for the year.

The amount you deduct for depreciation in a particular year will vary according to the method you choose to depreciate your equipment. Several approved methods and the tax effect are suggested by the American Institute of Certified Public Accountants.

Ground Rules When you purchase a piece of equipment that you intend to use in your business for more than a year, you cannot write off its cost as an expense in the year of purchase. However, you can deduct a portion of its cost as depreciation over the years of the equipment's useful life to the business.

How long will the piece of equipment be useful in the business? This is a decision you must make in the year you purchase depreciable equipment. To aid you in making this decision, the Treasury Department has prepared a guide, Bulletin F (available from the U. S. Government Printing Office), which lists the estimated useful lives of many types of equipment that may be used in a trade or business.

However, Bulletin F is merely a guide. The life span it lists for a particular piece of equipment could be called the economic or usual life span. If the conditions in your business are such that a new machine will receive more or less than usual use, you should consider this point in arriving at your own estimate of the period the machine can reasonably be expected to be useful to you.

Another decision you must make in the year of acquisition is how much can you expect to get for the machine at the end of its useful life —that is, what will its salvage value be? Here there are no government guides to help you. Fortunately, the only requirement is that your estimate be "reasonable."

Changing Profit Having estimated the useful life and salvage value of your equipment, you can easily determine the total amount you will be allowed to deduct for depreciation over the years. For example, if a new machine costs you $6,000, has an estimated useful life to you of ten years, and a salvage value of $500, your total depreciation deduction for the machine will be $5,500—never more than this. The Internal Revenue Service takes the view that you many not claim depreciation deductions below a reasonable estimate of the equipment's salvage value.

Now comes the question of how to claim your deductions. Depending on the method of depreciation you choose to use, your deduction for the first year may vary as much as $1,610—from $550 to $2,160. There are three approved methods for handling your depreciation.

1. Straight-Line Depreciation—In this method, you subtract the estimated salvage value from the cost or other basis of the equipment and spread the balance in equal yearly amounts over the equipment's useful life.

2. Declining-Balance Depreciation—This method may be used only on new equipment with a useful life of three years or more. Salvage value does not have to be subtracted from the cost for figuring the depreciation, but you must not depreciate below a reasonable estimate for salvage. The depreciation is computed by applying a fixed percentage each year to the balance of unrecovered cost. This rate may not be more than twice the yearly percentage that would be used in the straight-line method. Thus, in the case of an asset with an estimated useful life of 5 years, the rate would be 40 percent; a 10 year life 20 percent; and so on.

3. Sum of the Years-Digits Depreciation—This method, too, may

* By permission of The American Institute of Public Accountants.

be used only for new equipment with a useful life of three years or more. The depreciation is computed by applying a fraction to the cost less the estimated salvage value. The numerator of the fraction is the number of years of useful life remaining, and the denominator is the sum of the years-digits corresponding to the estimated useful life. If the useful life were ten years, the denominator would be 55 (10+9+8+7+6+5+4+3+2+1). In the first year, depreciation would be 10/55ths of cost less salvage value; for the second year 9/55ths, and so on.

Dollars and cents provide a good measure for comparing the effects of each of these methods. Let's stick with the example of the $6,000 machine. It has a useful life to the business of ten years, and an estimated salvage value of $500. The total amount to be depreciated then is $5,500. What could you deduct each year using one or another of these methods?

Year	Straight Line	Declining Balance	Sum of the Years-Digits
1	$550	$1,200	$1,000
2	550	960	900
3	550	768	800
4	550	614	700
5	550	492	600
6	550	393	500
7	550	315	400
8	550	252	300
9	550	201	200
10	550	161	100
	$5,500	$5,356	$5,500

Note that with the declining-balance, the full amount of available depreciation was not deducted during the useful life of ten years. This sometimes happens with the declining-balance method. However, the unrecovered balance is not lost as a deduction. It will be available when the property is sold, retired, or abandoned.

Additional First-Year Depreciation If you wish, you may increase your deduction in the first year, regardless of the method you use, by taking advantage of an additional first-year depreciation allowance of 20 percent. This allowance was created, as a part of the 1958 Technical Amendments Act, specifically to help the smaller business overcome the drain on capital of equipment purchasing; and it is available only in the first year for which depreciation on the equipment may be claimed as a deduction.

You may take the additional first-year depreciation allowance of 20 percent on equipment costing a total of not more than $10,000 ($20,000 on a joint return). The equipment must have a useful life of six years or more. The allowance would be subtracted from the cost of the equipment without consideration of salvage value. The remaining balance would be the basis for computing your regular method of depreciation.

In other words, on our $6,000 machine, the 20 percent allowance would be $1,200, leaving $4,800, to which you can apply any of the approved methods of depreciation subject to the rules for the treatment of salvage value.

Thus, if straight-line depreciation were used, the total depreciation deduction for the first year would be $1,630; declining-balance depreciation, $2,160; sum of the years-digits depreciation, $1,982.

As you can see, using one method rather than another can certainly affect your taxable income for the year. The question is, would it be better to have larger deductions this year and in the next couple of years which would taper off sharply in later years, or would it be better to even out your deductions over the entire period? There is no pat answer. You can make the right decision only in light of your present operations and your budgetary forecast.

One consideration is that a large deduction in the first year will save taxes immediately (rather than later) and provide additional funds for self-financing. Then again, a company with low current earnings but good future prospects might prefer to save some of the deduction for later years by using the straight-line method. These are two possible considerations, but there are others. A certified public accountant could guide you to the right decision for your business.

Additional Information This article presents merely the outline of computing depreciation. A number of other questions may need to be answered. For example, what happens if you sell the equipment before or even at the end of its useful life and make a gain or loss on the sale? What happens if you trade in old equipment on new equipment? Does it make any difference whether depreciable equipment is purchased at the begining of the year, the middle of the year, or the end of the year? Can you change your method of depreciation? For answers to these and other questions about depreciation, and, in fact, about many other business problems, your best bet is to seek the advice of an expert, a certified public accountant.

Gypsum, Gypsum Products Set New Highs in 2nd Quarter

Output of crude gypsum from domestic mines during the second quarter of 1959 as reported to the U. S. Bureau of Mines, totaled 2,834,014 short tons—21 percent more than in the second quarter of 1958 and almost equal to the second-quarter production record established in 1956.

Imports soared to an all-time high for a quarter—1,779,692 tons—an increase of 71 percent over the previous second quarter. The tonnage of crude gypsum available during the quarter was the highest on record. Production of calcined gypsum also reached an all-time high, surpassing the third quarter of 1955, and was 29 percent higher than the second quarter of 1958.

Sales of uncalcined gypsum products increased 17 precent as sales of portland-cement retarder rose sharply. Industrial and building plasters showed percentage gains of 34 and 12, respectively, over sales in the corresponding period of 1958. Of the plasters, the base-coat showed the largest tonnage increase. Greater quantities of all gypsum-board products also entered the market. Manufacture of wallboard, sheathing, and laminated board exceeded that in any preceding quarter, while output of lath and formboard remained on a high level.

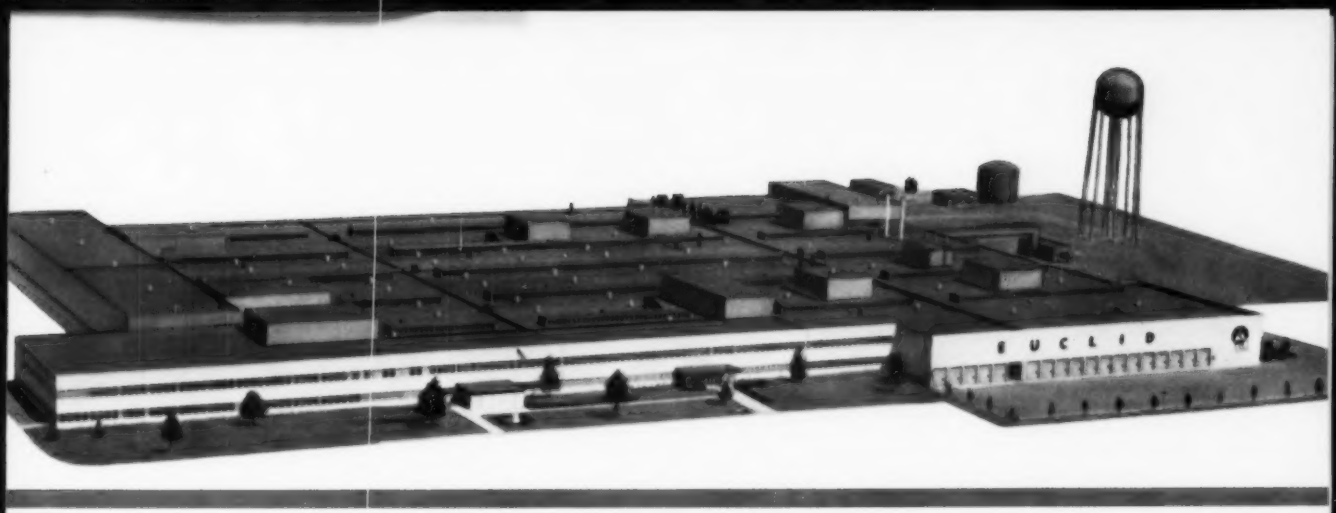
Enter 169 on card, page 241 →

BIG CRAWLER TRACTOR NEWS FROM EUCLID!

C-6 Crawler now in production at Euclid's new tractor plant

A new concept in crawler tractor design, the Model C-6 is the most recent addition to the modern line of Euclid equipment developed and job proved during the past 5 years. Like the big twin-power TC-12 tractor, as well as 5 new scraper models and 4 new rear-dump haulers, the C-6 has the power, speed and versatility to get more work done faster and at lowest cost. All of these new "Eucs" incorporate years ahead engineering that has been a major factor in maintaining Euclid's leading position in the construction equipment industry for many years.

Now a big modern plant at Hudson, Ohio, designed exclusively for the manufacture of Euclid crawlers, is in production on Model C-6 and TC-12 tractors. Here every facility is provided to assure a uniform high standard of product quality that pays off in dependable long life performance of Euclids on every job.



C-6 sets a new standard in 200 h.p. tractor class

Brand new in every way . . . in functional design, ease of operation, service accessibility and productive capacity . . . but a "veteran" of many thousands of operating hours on a wide range of actual jobs and thorough testing at the proving grounds. No other machine in Euclid's history has ever been so completely proved for productive capacity and long service life before the start of volume production.

With 211 net h.p. and job proved Torqmatic Drive, there's a smooth, steady flow of power to match the work load. Changes from any speed range to another and from forward to reverse and back again, are made under full power . . . there are 3 speed ranges in forward and reverse, with a top speed of 7.9 mph.

Dry type air cleaner, full hydraulic track tensioning, independently suspended track frames and final drives, rear mounted cooling system, fewer lube points, and "package" assembly of major components are some of the other C-6 features that make this "Euc" outstanding for easy servicing and maintenance.

Compare and prove for yourself...

THE "EUC" C-6 IS THE LONG-NEEDED "STEP AHEAD" IN CRAWLER DESIGN

When you check all the things that really count in crawler performance . . . easy operation, maneuverability, power and traction for tough work, and minimum downtime . . . you'll see why the new C-6 is your best investment in the 200 h.p. class. No matter what the job is . . . heavy dozing and ripping, push-loading big scrapers, pulling heavy loads, stripping, land clearing, or handling stockpile assignments . . . the versatile C-6 cuts costs and gets more work done faster.

The Euclid dealer in your area will be glad to show you why the C-6 is your best bet for increased production at lowest overall cost.

GM GENERAL MOTORS EUCLID

EUCLID

DIVISION OF GENERAL MOTORS
Cleveland 17, Ohio

EUCLID (GREAT BRITAIN) LTD.
Lanarkshire, Scotland

. . . a complete line of equipment for heavy earthmoving, mining, logging and many industrial operations . . .

Printed in U.S.A.

Quarrying Under Difficulties

How water problems were solved at Marquette's Mississippi plant

ANOTHER ON THE SPOT REPORT

MARQUETTE Cement Manufacturing Company's modern cement producing operation in Brandon, Miss., requires mastery of difficult working conditions that include inundated haul roads, confined working space, and variable, spring-filled layers of limestone, marl, and clay. Limestone, marl, and clay are quarried near the plant, crushed and processed to the finished products—portland and masonry cement, packed and shipped from the Brandon plant.

The 1,000-acre Marquette Cement quarry is located a half mile from the plant. Geologically, the deposits are young—about 50 million years old. The overburden varies in depth from 2 to 30 ft. and consists of clay, topsoil, and red sand.

A new, turbocharged D8 Cat tractor with a straight blade is being used to remove the overburden into nearby spoil piles. Otis Baker, quarry foreman, estimates that the D8 moves 1,800 cu. yd. of overburden each 8-hr. day. When necessary, a 3½-cu. yd. Northwest shovel, powered by a D375 Cat diesel engine, is also used to load overburden from box cuts into three DW21 wheel tractor—Athey PR21 wagon combinations.

When the job was visited in June, the DW21-PR21 units were loaded by the Northwest and hauled overburden about 300 ft. The spoil was being used to fill water holes. The box cut in which the haulers were working was about 38 ft. wide and the 35-cu. yd. units were able to turn without backing, having about 4 ft. to spare.

In addition, the formations being worked are riddled with springs that fill operating areas and haul roads. Heavy rains this year have added to the water problems. A combination of pumps and drainage ditches are used to provide drainage. However, the haulage units were operating on extremely muddy haul roads with water standing as deep as 2-3 ft. in some places.

In an effort to maintain good haul roads between the quarry and the crusher, a DW10 wheel tractor with a side dump wagon dumps bags of portland cement as a stabilizer to mix with red sand. This operation results in a 4-in. layer of red sand and cement which combined with prevailing water conditions, forms a haul road with relatively low rolling resistance.

The new D8 tractor and a LeTourneau-Westinghouse model C Tournatractor mix the cement and red sand on the haul road. The Model C is also used for general clean-up around the dragline.

The ever-present moisture makes both the overburden and quarried

A 3½-cu. yd. shovel loads overburden into a tractor-wagon combination at the Marquette limestone quarry in Brandon, Miss. Numerous springs in the area combined with heavy rains to inundate haul roads. Overburden ranges in depth from 2-30 ft.

Overburden is stripped by a D8 tractor. The overburden is removed at an approximate rate of 1,800 cu. yd. each 8-hr. day.

Bags of portland cement are dumped to stabilize haul roads between the limestone quarry and crusher at the plant. This operation results in a 4-in. layer of red sand and cement, forming a haul road with low rolling resistance.

This tractor-wagon combination is shown dumping overburden.

material gummy and hard to handle. For this reason, Marquette is using PR21 wagons which are equipped with hydraulic ejection mechanisms that scrape the wagons clean during dumping.

Once the seam is reached, blasting is used. The horizontal and vertical patterns of blasting vary considerably because the rock presents no solid face. The layers of limestone, marl, and clay differ in size and hardness from one location to another. Self-propelled drills usually bore holes about 28 ft. deep, into which dynamite is loaded. Average depth of the quarry pits is 28 ft.

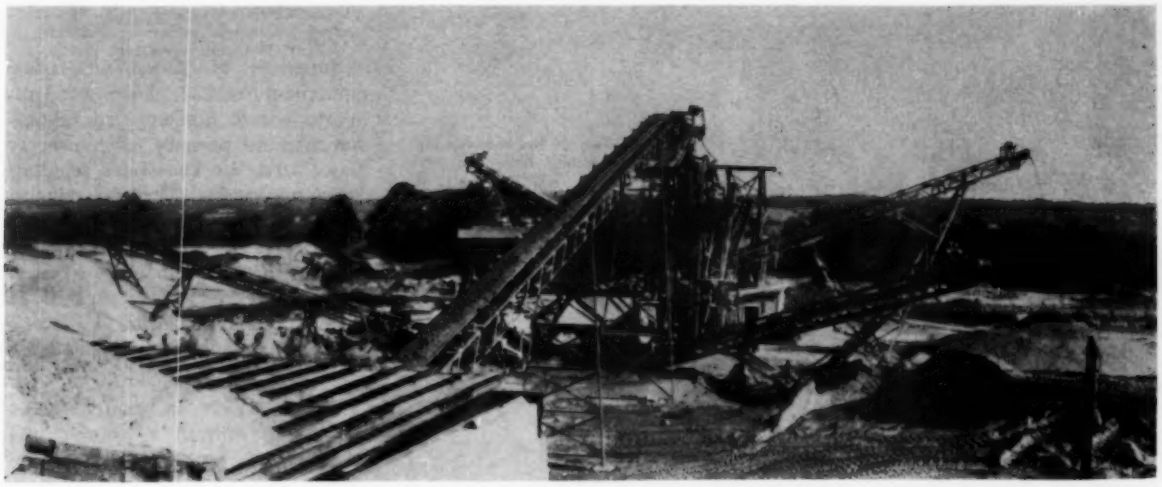
A P & H shovel, with an 80-ft. boom, then loads into the three DW21 hauling units. Quarry foreman Baker estimates that over a half-million tons are quarried yearly. Each DW21 averages about five 30-ton loads per hour on an average one-way haul distance of one mile. When weather permits, the quarry crew of 16 operates eight hours a day, five days a week.

The haulers dump the limestone, marl, and clay into a crusher feed hopper. Below this hopper is a pan feeder which permits the operator to control the rate of feed into the primary crusher. The crusher breaks the material to an 8-in. minimum.

The crusher, a tooth-studded roll, is the first of its kind and was designed to meet Marquette's own specifications. Many of its features were created by Marquette's engineering department, such as a moving breaker plate, which constantly presents a clean crushing surface to the roll. Without this feature, the crusher could not do its job on these particularly gummy materials.

After this first crushing, the raw materials are carried by an inclined conveyor belt to a feed hopper for washing, classifying, and secondary crushing. The secondary crusher is the impactor type and reduces the rock to pea size.

Domestic production and sales of abrasive materials in 1958 declined from 1957, according to reports released by producers to the U. S. Bureau of Mines. Substantially lower steel and automobile output was the primary cause of the decline.



This overall view of the plant site illustrates the compact nature of the Parmar operation, and its central stockpiling layout.

Parmar Sand—Newcomer to Industry

By BUREN C. HEROD

plant design, operations reflect owners' foresight, ability

ANOTHER ON THE SPOT REPORT

WITH the organization of Parmar Sand, Inc., late in 1958, aggregate production for expanding construction in western Pennsylvania and eastern Ohio was bolstered by a vigorous newcomer.

Although none of the men who organized the firm had had any previous experience in this industry, their respective business and construction backgrounds were effectively combined in the development of an efficient 250-t.p.h. sand-and-gravel operation at Transfer, Pa., a short distance north of Sharon.

Built to produce materials meeting specifications of the highway departments of both states, the plant was set up to take full advantage of the variations in the sand-and-gravel deposits available to it.

The detailed layout, based on a flow design by Mike Mariani, one of the firm's founders, was furnished by the Goodman Manufacturing Company. The design provides for control over the relative quantities of differing materials delivered into the process, for turning out at least seven products in one pass, and for future expansion with minimum disruption to existing facilities.

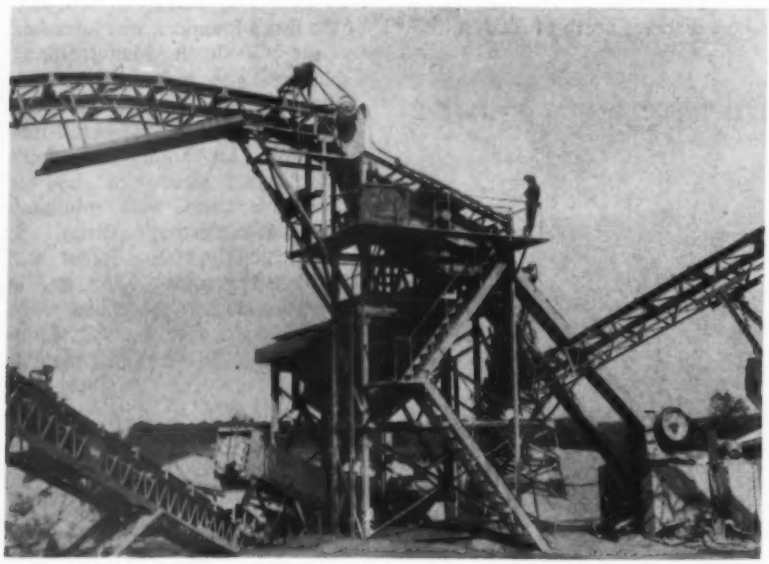
Construction of the plant was started in November, 1958, and in May, production got under way. Located on a leased tract of approximately 600 acres, the plant is supplied from deposits that have

Loading operations in the main pit. The raw face in this area stands unusually well, and has a fine gradation, as seen behind the shovel.

Two of the organization's officers: Mike Mariani, left, who devotes his efforts primarily to operations, and Ralph Pallante, who handles sales and management.

At the twin-hopper plant feed installation, trucks from the two pits dump over the appropriate hopper.

Below: The primary screening tower. Note the arc of the feed conveyor (see text), designed to allow for future expansion of primary screening. At the lower right is the primary jaw crusher.



been proven to a depth of over 100 ft.

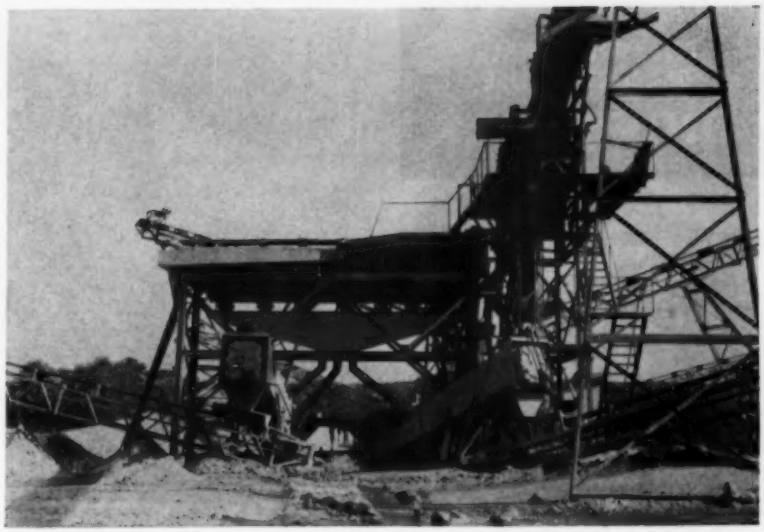
Suppliers of major processing equipment include: Diamond Iron Works—feed hoppers, conveyors, screens, and primary jaw crushers; Eagle Iron Works—water scalping tank, and screw washer-classifiers; and Nordberg Manufacturing—secondary cone crusher. Republic Rubber conveyor belting is used throughout, and Boston speed reducers in most instances. All screen cloth is supplied by Cleveland Wire Cloth and Mfg. Co.

Currently, two separate pit areas are being utilized to supply the plant. In one of these, a face averaging from 15 to 20 ft. is being worked in an area that furnishes an excellent percentage of the relatively coarser sizes, but it has a nominal amount of material in excess of 6 in. As seen in an accompanying photograph, the operating face stands exceptionally well. The other pit is worked in an area containing material predominantly in the sand ranges.

Haulage units are loaded from the former pit face by a 1-cu. yd. P&H shovel, and from the sand area by a Trojan Hi-Lift. Haul from either area is less than one-half mile. In view of the fact that the water table in the pit areas is not far below the levels now worked, consideration is being given to the use of dredging for future plant supply.

As delivered from either pit area, the respective pit-run material is dumped on the appropriate side of the Diamond twin-hopper plant feed installation, which is protected from oversize by rail bars on 8-in. centers. Each of the 25-ton hoppers supplies No. 1 conveyor *via* a separate reciprocating plate feeder. Individual control of the two feeders permits the elimination of any flow from the sand hopper, or the blending of any amount of that material with the pit-run sand and gravel from the other hopper when greater production of sand fractions is desired.

At the top of the primary screening tower, No. 1 belt discharges into a wash box preceding the triple-deck Diamond screen. On the possibility of future expansion of this phase, the last section of the plant



Sand production is centered here, with material delivered from the upper scalping-classifying tank to the concrete and masons sand screws, right and left.

feed conveyor was fabricated on an arc with a radius of 40 ft.

This arrangement will allow the later installation of another screen preceding and in series with the existing unit. The high point of the arc will become the discharge point after the last few feet of the present conveyor have been removed. There will be no need for major revision to the present primary screening tower, or relocations of existing conveying units allied with this operation.

Primary separation is made, for example, with screen cloth having 1-in. openings on the top deck (which is fitted with spray bars), a ⅜- and ½-in. split deck on the middle, and 5/16 in. on the bottom. The top deck retained fraction is chuted to the primary crusher. That from the middle deck may be chuted to the same belt which receives the primary crusher product or to conveyor No. 2 for transfer to stockpile of #4 natural gravel (Ohio spec.).

Material retained on the lowest deck is chuted to conveyor No. 3 and carried to stockpile, while that passing flows with the wash water to the triple flume Eagle scalping-classifying tank. From the latter, sand is delivered to a pair of 36-in. Eagle single-screw washer-classifiers. Concrete sand processed through one of these units is delivered to stockpile conveyor No. 4, and masons sand from the other is stockpiled *via* conveyor No. 5.

Set to reduce its feed to a top size of 1½-in., the Diamond jaw crusher discharges to conveyor No. 6. Along with the middle deck fraction of the primary screen, as noted previously, the crusher product is carried to the secondary screen tower.

Here the feed is delivered to the 4- by 12-ft. Diamond triple-deck final screen which may be fitted with ¾-in. screen cloth on the top deck, a split of ½-in. and ½- by ⅜-in. on the middle deck, and 8-mesh on the bottom. Spray bars are installed above the top deck.

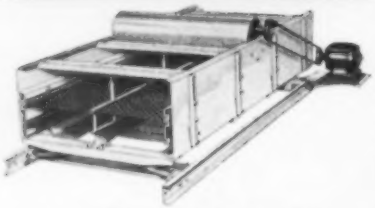
The top deck fraction is chuted to the 3-ft. Symons cone crusher for secondary reduction, and is then returned on conveyor No. 7 to No. 6 in closing the circuit. This reduction is done through a ¾-in. setting. Material retained on the middle deck is chuted to conveyor No. 8, and carried to the stockpile of crushed #4 aggregate. The bottom deck retained fraction is delivered to conveyor No. 9 for stockpiling. Both of the latter conveyors are swiveling units that can operate through a 90-degree arc.

Minus 8-mesh material passing the bottom deck is collected in an underlying hopper from which it is flumed with the screen water to a 20-in. Eagle screw washer-classifier. Crusher dust is processed and reclaimed with this unit, and discharged directly onto a stockpile. The 1,200-1,800 g.p.m. of water required for the screen spray bars, scalping tank, and screw classifiers

Equipment Data

Unit	Size	Drive (hp.)
Dump hopper plate feeders	24″ x 42″	3 (ea.)
Conveyor No. 1	30″ x 140′	20
Primary screen	4′ x 12′ (3D)	15
Conveyor No. 2	18″ x 65′	5
Conveyor No. 3	18″ x 65′	5
Scalping tank	28′ (triple flume)	
Washer-classifiers (single screw)	36″	10
Conveyor No. 4	24″ x 60′	7½
Conveyor No. 5	20″ x 80′	7½
Primary crusher	10″ x 24″ (jaw)	40
Conveyor No. 6	24″ x 90′	7½
Secondary screen	4′ x 12′ (3D)	15
Secondary crusher	3′ cone	60
Conveyor No. 7	18″ x 50′	5
Conveyor No. 8	18″ x 80′	7½
Conveyor No. 9	18″ x 80′	7½
Washer-classifier (single screw)	20″	7½

FOR PROFITABLE SCREENING USE
UNIVERSALS



- FAST, SIMPLE, RUGGED
- DEPENDABLE
- ECONOMICAL
- STOCK DELIVERIES
- FAST SERVICE

Write today for free catalog No. 150 on screens and screening

UNIVERSAL VIBRATING SCREEN CO.
Racine, Wisconsin
Quality Screens Since 1919

Enter 178-A on card, page 241

FOR DEPENDABILITY PLUS ECONOMY
REPLACE WITH
INDIAN BRAND

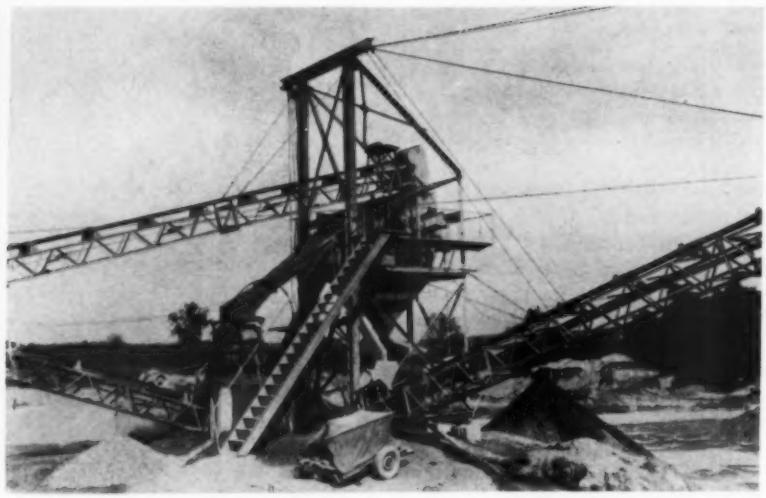
Get the most out of your present equipment. When you need replacements, remember we started in 1913 to build our reputation in the Manganese Steel field for dependability plus economy.

Insist on INDIAN BRAND MANGANESE STEEL

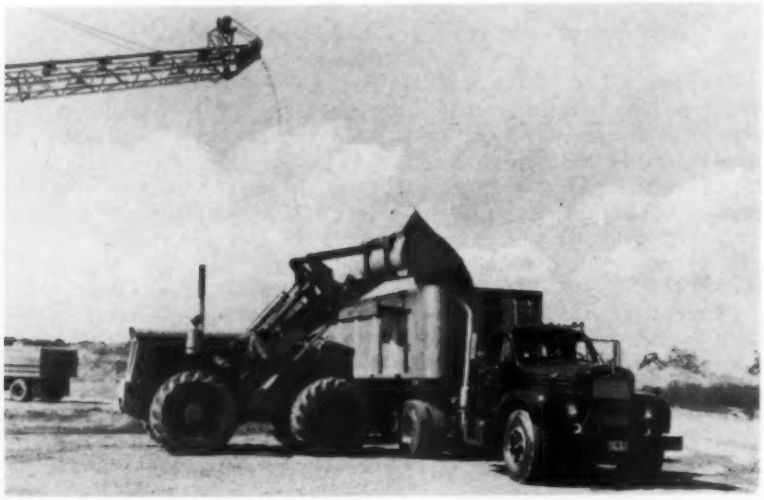
Shovel Dippers • Dipper Teeth
Shovel Treads
Crusher Jaw Plates
Mantles • Concaves
Bowl Liners • Roll Shells
Pulverizer Hammers
Grate Bars • Breaker Plates
Ball Mill Liners • Screen Plates
Misc. Manganese Steel Castings

THE FROG, SWITCH AND MANUFACTURING COMPANY
Carlisle, Pennsylvania • Established 1881

Enter 178-B on card, page 241



From the secondary screen, top size is fed to the secondary crusher, lower left and the other fractions to a screw classifier and swiveling stockpile conveyors.



Distribution, and loading from stockpiles is handled with this unit. The aluminum trailer shown has upped payloads for the contract hauler by five tons per trip.

is provided by Deming pumps.

Rehandling and loading from the stockpiles of the seven basic materials produced (including sand) is done with an Allis-Chalmers Tractoloader. All shipments are made by truck, either customers' units or contract haulage, and loads are weighed out over a 50-ton Howe platform scale. One contract hauler trucking from this plant has replaced older steel trailer bodies with Lodestar aluminum units behind Mack tractors. With the same body volume, payloads have been increased by 5 tons on each trip.

Although most shipments have been made across the state line into Ohio areas, in which the sales have been basically to commercial construction and road work, deliveries to customers in the surrounding Pennsylvania communities have been on the increase. This young organization was fortunate in that its initial production coincided with a resurgence of local construction.

Having enjoyed healthy demand while getting established, Parmar officials can look forward with confidence in the ability of their operation to handle growing material needs. In addition to Mike Mariani, who concentrates primarily on operations, company officers include Paul Parker and Ralph Pallante.

Enter 179 on card, page 241 →

Special report to owners of Traxcavators, D6 and D4 Tractors

CAT CATERPILLAR

Parts you can trust
Dependable round-the-clock service

Now available...lifetime lubricated rollers...two-way savings...

ELIMINATE MAINTENANCE GIVE LONGER LIFE

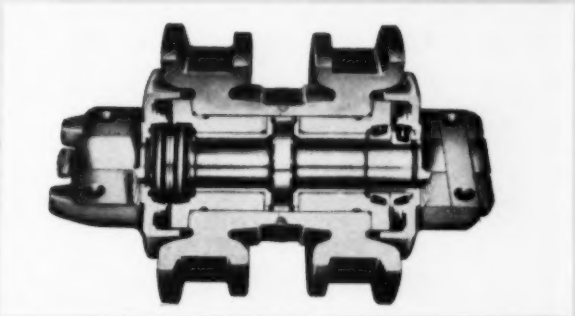
Here's another cost-cutting improvement for Traxcavators and both D6 and D4 Tractors . . . lifetime lubricated rollers. Now you can eliminate on-the-job shutdowns for greasing. And you get longer life from rims, flanges, internal parts. The payoff . . . reduced replacement costs, savings in time.

How maintenance is eliminated—the new Cat-built rollers are lubricated when first installed. They are equipped with floating ring seals that keep lubricant in . . . grit out . . . for the life of the rollers. Only when rollers are disassembled for rebuilding will relubrication be necessary. And the original metal rings can be reused.

New floating ring seal . . . only four parts, no springs. The roller seal employs two alloy metal rings and two rubber "O" rings. The metal rings, much harder than the best file steel, have lapped faces, smoother than glass. These faces taper slightly toward the inner edge forming a sealing area at the outer edge. As wear occurs, the sealing area moves gradually inward, maintaining a perfect seal for thousands of hours.

The "O" rings keep constant pressure on the metal rings. Lubricant can't get out. Grit can't get in. There are no springs or diaphragms to weaken, wear or become damaged. The "O" rings are made of special compound to resist oil, heat, cold.

Why do roller parts last longer? Grit is permanently sealed out. Big lubricant reservoirs (with strategically located oil passages) insure ample supply of lubricant to moving parts. Oil instead of grease is used for roller lubricant. Oil dissipates heat faster, circulates more freely than grease. These features assure you of longer shaft and bearing life. Longer bushings with extra-thick flange assures rigid support. Large sleeve bearings provide ample bearing area. Larger diameter, deep-hardened shafts withstand higher shock loads. Beam strength has been increased 63% for D6 shafts; 185% for D4 shafts. Resistance to side thrust is greatly increased in D4 shafts by a 25% wider center flange and 73% more thrust-bearing area.



Why do rims and flanges last longer? The new two-piece roller shell has greater strength and impact resistance. Special heat-treat process provides extra-hard and deep wear surfaces. Ample steel under tread gives strong support to resist shock loads. Thicker flanges combat peening over. Overlapping center joint maintains rigid shell without separate hub.

Easy installation is achieved by use of snap rings to hold the seals and end collars in place before mounting. End collar bolt holes will line up easily with track roller frame holes during installation.

Millions of hours of proof—the toughest track rollers yet. Cat lifetime lubricated rollers have been subjected to extensive and exhaustive on-the-job tests for over 5 years. Working on all types of job conditions, these time-tested rollers have proved to be unequaled. And machine-owner reports prove that Cat lifetime lubricated rollers can't be beaten for low-cost, minimum maintenance operation.

See your Caterpillar Dealer. He'll give you the full story on this time-saving, money-saving undercarriage component.

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U.S.A.

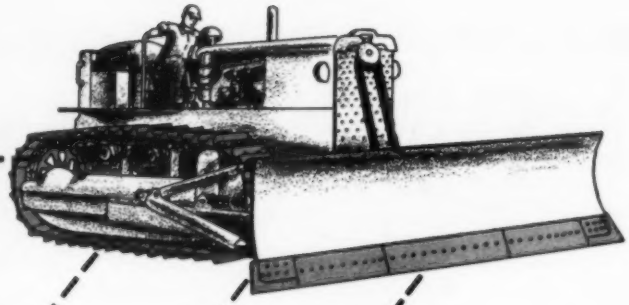
SERVICE TIP: When rebuild time finally comes, be sure to keep the metal rings matched in original pairs, being careful not to nick or mar the lapped surfaces.

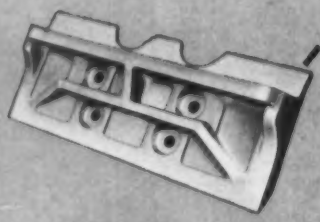
CATERPILLAR

Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

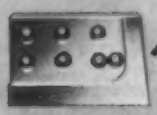
REDUCE COST AND DOWNTIME . . . WITH

RENEWABLE SPROCKET RIMS





TRACTOR PADS

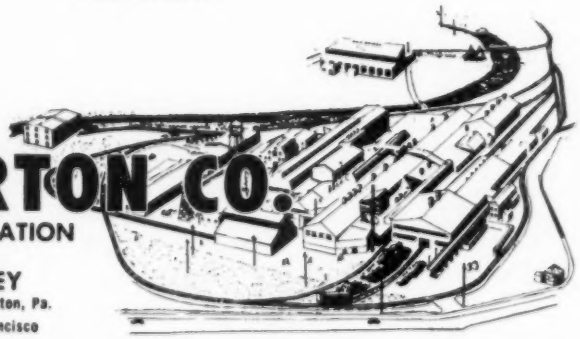


END BITS

DOZER BLADES

TISCO®
TRACTOR REPAIR PARTS

Made of tough Manganese Steel which "improves with age" becoming harder from impact and the stress and strain of machine operation, Tisco Sprocket Rims, Tractor Pads, End Bits and Dozer Blades are designed to give longer service life and greater economy of operation - - **WRITE TODAY FOR BULLETIN 1-59** which describes how worn sprockets can be readily reclaimed; how it has been possible for special design features to be incorporated into Tisco Tractor Pads and how Tisco End Bits and Dozer Blades resist abuse and abrasion.



TAYLOR-WHARTON CO.

DIVISION OF HARSCO CORPORATION

Established 1742

HIGH BRIDGE 3, NEW JERSEY

PLANTS: Cincinnati, O. — Birmingham, Ala. — Easton, Pa.

SALES OFFICES: New York — Chicago — San Francisco

the Coming Role of Pozzolans

Part IV—Product Potential Through Process Design

By WOLF G. BAUER
Consulting Engineer

DEVELOPING a marketable pozzolan, pozzolan blend cementing material, or pozzolan-base finished product entails a rather broad research and testing program; more so, perhaps, than is the case with many other materials, such as aggregates, for example. The pozzolans, once developed as such, must be tested with all of their potential admix materials with somewhat of a "show-me" attitude, for they behave differently with admixtures from different sources.

Moreover, pozzolans from various localities or raw material sources behave differently with the same admix material. This fact is probably one of the least appreciated, and needs to be taken into account at all times during the development phases of each manufacturing project. To the clay products industry, for instance, such variability of raw material, as it affects both processes and product, is more often the rule than the exception; and those who are engaged in clay technology take full cognizance of the fact, and learn to live with it. Hence it would be difficult, indeed, to find two clay or ceramic products plants using the same processing techniques for achieving the same specified product result.

Pozzolan Development vs. Pozzolan Testing

It is one thing to test a pozzolan as to its relative strength or buffering value, and quite another matter to take a raw material and develop a satisfactory pozzolan from it. Of the dozens of types and materials submitted to the writer each year for evaluation and "testing," invariably such raw materials or by-products are either undeveloped pozzolans or partly developed pozzolans. Such testing must be preceded by a systematic program of process research to determine an optimum value that can be achieved through some sequence of special processing steps in keeping with economic considerations. However, once such process research has produced an optimum reactivity and quality limit, this is the time to "test" the pozzolan thus created for its various proposed applications.

Many laboratories can perform this latter testing function for strength, shrinkage, permeability, or various chemical buffering qualities with local cement and admix materials; but they generally lack commercial process experience and suitable pilot equipment for developing an acceptable pozzolan from the raw material submitted for "testing," and in sufficient quantity for "proof-of-the-pudding" application tests in limited consumer evaluation.

BASIC AND APPLIED PHASES OF POZZOLAN DEVELOPMENT

Many phases of engineering enter into the creation of a minerals processing plant — ranging from the choice of raw material and deposit, winning techniques to be employed, design of the process, design of special equipment to accomplish the process, to the final overall design of the plant layout and product control system.

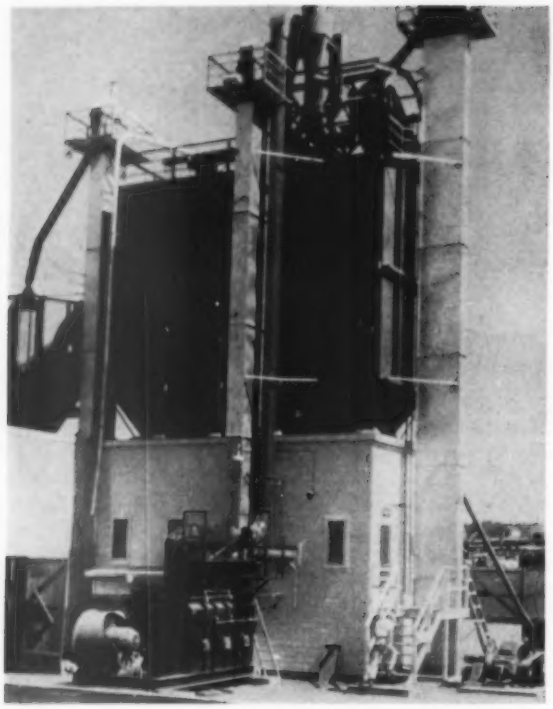
To the engineer in this field, perhaps one of the most fascinating aspects of such a project is that of arriving at the *process design*. Here not only the application of the engineer's personal experience and that available from others in similar fields come into focus, but even more important, the "actual pre-experience" of the engineer with the material itself under simulated "process-to-be" conditions.

The terms "basic" and "applied" will be used here to differentiate between the initial fact-gathering portion of developing optimum pozzolan properties, and the subsequent application of these facts to the design of the process.

In the basic investigation we deal with rather small quantities of material, up to about 10 lb., and our process techniques are of the batch type conducted under closely controlled conditions.

Under the applied process development we strive to duplicate or improve upon the best results obtained in the basic phase, and our techniques are those of actual or simulated continuous-type processing under somewhat less ideal conditions. In this applied process investigation, pilot-size equipment is used in order to produce perhaps a ton or two of material for "proof-of-the-pudding" evaluation of the product, as well as for gathering some quantitative processing factors toward commercial design.

While the applied phase is, of course, desirable and usually inescapable, there may be rare instances in which the combination of an extremely high-quality raw material, and simplicity of processing requirements obviate the need for elaborate pilot process development. This might hold true for materials



A pozzolan processing plant operated by a single attendant (planetary design). The operator takes care of raw material deliveries to the receiving hopper, crushing and screening recycle (right bottom and top); drying to closely controlled moisture (fluid-bed dryer-cooler, center foreground); cement rail-car unloading and elevating for blend product; proportioning and mixing control from bunker compartments; ball mill grinding (building at left); air classification and recycle load control through conveyor amperage recorders (left center); additive control, storing, and air-conveying to an adjacent block plant; and product check-testing — all done in the control center building.

which do not require heat activating, and for which grinding is not a critical process phase. In case the product and application offer so many unknowns and variables as in this field, it is unwise to base a future operation on only a basic research.

Developing the Test Pozzolan Pozzolans can be developed from suitable natural or by-product raw materials by exposing them to single- or multi-sequence processing conditions. The following five major approaches have been used by the writer:

1. **Upgrading**—The new material might lend itself to concentrating, as it were, prior to developing pozzolanic reactivity. Examples may include such techniques as the following: selective quarrying; removal of sand from silty clays by either wet or dry method; differential crushing for removal of hard or soft fractions of lower reactivity; removal of a coarse glass fraction, along with a major portion of carbon, as in fly ash, by screening, air classifying, and/or calcination; or drying-scrubbing of soft clayey material from pumicites and other volcanics.

2. **Heat Activating**—Examples include practically all types of pozzolans, the heating conditions of time, temperature, and atmospheric composition producing various effects on the pozzolan properties.

3. **Pozzolan Powder Surface** (Grinding)—In view of the need for rapid chemical reactions with lime and other alkalies, the optimum amount of reactive surface must be developed by grinding. Particle shape also has considerable influence on the particle size required to effect optimum surface area. Plate-like crystal shapes such as found in the clay minerals, for instance, require less grinding, shorter mills, and higher circulating loads in the circuit. Some raw materials, such as certain pumicites and diatomites, have additional interior surfaces affecting pozzolan properties, *e.g.*, shrinkage and water requirements, and must therefore be sized differently.

4. **Particle Size and Distribution** (Classifying)—Strength and reactivity are related to an optimum particle size gradation; and beyond a certain surface area development additional particle size reduction will not enhance these properties, but actually lower them. Process design thus deals here with the following: grindability of the pozzolan material as it affects return of coarse rejects from the classifier for attrition, rather than ball-impact grinding; the effect of agglomeration or dispersion in both grinding and classifying media; the chemical base of any grinding aid added; and control achievement in adhering to an optimum established fineness modulus curve which can be checked with an elutriation apparatus.

5. **Reaction Accelerators** — There are many organic and inorganic compounds, acids, salts, and catalysts which, when added in small quantities to lime-pozzolan mixes, will tend to hasten early strength development. These will not equally affect the various types of pozzolan, but some of them have shown remarkable success on speeding up the pozzolan-lime reactions in hydraulic cements with or without portland cement admixture.

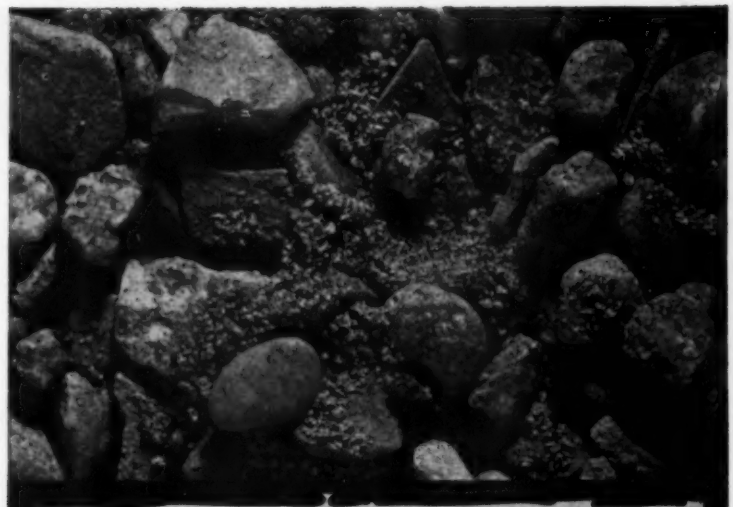
These five approaches for developing a raw material into a pozzolan are explored with the basic-type techniques and equipment.

Basic Process-Development Stage The first evaluation of a material is generally made on the sample with the minimum of treatment. If the material is a natural mineral or rock, an initial subjection to heat treatment is included in the first comparison series.

For this purpose we use a small crusher and hand screens to prepare the sample into a narrow size range of particles, an electric or gas-fired furnace with close temperature and atmosphere control, a small batch-type pebble mill, a Blaine specific surface apparatus, and a Vicat needle setup to measure relative penetration of lime paste at certain time intervals. The first-run series is made with the samples heated to process temperatures of 1,200 deg. F., 1,500 deg. F., and 1,800 deg. F. under oxidizing conditions. Heating-up time to the process temperature is carefully simulated, both in rate and atmospheric neutral conditions, to equal those expected to prevail in the size of commercial kiln to be employed for the tonnage requirements.

AGGREGATE IS JUST SAND AND GRAVEL...

UNTIL WEMCO ENTERS THE PICTURE...



Today, you don't turn a sand and gravel deposit into real profits—unless you have a low-cost, volume operation—and a quality product!

So it is that so many operators turn to WEMCO for the shortcuts to sound, economical production. Through nearly 20 years' of experience in the aggregate industry, WEMCO has pioneered methods, engineered the equipment that consistently has been able to upgrade deposits to acceptable, marketable specifications. The WEMCO MOBIL-MILL, for example, is the first pre-fabricated, packaged heavy media separation plant, complete and ready for installation and operation; requires no additional labor, produces premium aggregate the first day! A complete line of other WEMCO EQUIPMENT for preparation, beneficiation and handling of aggregate, too, is available.

We'll be glad to furnish details on how WEMCO can work profitably for *you!*

A WEMCO man can give you details on getting the most out of your operation. Why not call him today?

WEMCO

a division of
Western Machinery Company, *Dept. P. Q.*
650 Fifth St., San Francisco, Calif.
and throughout the world

Exposure time at process temperature level is carried out at 20 minutes and 40 minutes. Cooling is also at rates simulating commercial rates. Grinding is done to two initial degrees of fineness, 4,000 and 8,000 sq.cm.gr. Blaine specific surface without additives. This procedure then provides an initial process design series of eight samples for tests. If all samples show some lime reaction in the Vicat needle penetration test, they are further subjected to the 7-day lime mortar compression test in special sealed molds.

If only one or two samples show some lime set with the needle, only these given samples are subjected to lime mortar compression. If successful, this has then produced the first basic process pozzolan for testing with cement in mortar and concrete mixes for strength in compression and flexure, permeability, acid and alkali resistance, shrinkage, and replacement factors with various aggregates and brands, as well as various types of cement.

Often we also make a mineral evaluation by means of X-ray, differential thermal analysis, or petrographic microscope, in order to understand better our heat activating needs and basis for reactions.

After these tests, or while these tests are being made—or in case first results are not yet satisfactory —it is possible to "zero-in" on optimum process conditions with another follow-up series of variations in the five basic processing approaches — up-grading, heating, grinding, classifying, and accelerating additives.

Applied Process-Development Stage The second distinct phase of developing a potential pozzolan follows the basic process investigation, and has as its objective the final process design, as well as a small commercial-use sample of the developed pozzolan for introductory consumer testing. The main difference in technique and equipment between this and the preceding basic-type investigation are those of (1) size, (2) use of continuous instead of batch type processing, and (3) test applications of various pilot-size equipment and commercial techniques, with both process and economic factors in mind.

Equipment used in the applied process design work is quite varied, some of it borrowed from other industries. The writer uses extrusion, pelletizing, agglomerating, and briquetting techniques for friable, dusty, or plastic raw materials preparation, or various types of crusher-screen circuits for harder materials, plus variable-speed beater mills for selective grinding and upgrading.

For drying and calcining, we use semi-commercial-size rotary kilns with various firing techniques and fuels, as well as fluidized bed reactors and flash-heating systems and mills. Such materials as diatomaceous earth, pumicite or volcanic ash, certain shales and fly-ash are also subjected to flash-heat or short-heat activities *via* fluid-bed equipment when basic technique results dictate rapid heating.

For grinding soft materials, we first check the sample in high-speed pulverizers to determine reactive surface production, with lower power and equipment cost, although for most pozzolans a pilot ball mill system with a mechanical closed-circuited air-classifying system is used under very close quantitative controls. With the mechanical air separator system, we also use a three-stage air elutriation classifier for particle-group fineness ratio determinations. Much of this equipment is related to full-scale commercial operations through later comparisons, allowing scale-up interpolation for final process design.

SUMMARY

Pozzolans, it may be seen, must be developed to their optimum value and reactivity before they are tested for evaluation. This may take some time and effort. It requires primarily a basic processing study based on up-grading, heat activity, reactive surface development, particle sizing and gradation, and possible use of certain compatible accelerators or catalysts.

Results of such research serve as the initial guideposts to process design with pilot equipment. The final pilot process design and setup also furnish a large enough sample quantity for limited-scale commercial "proof-of-the-pudding" testing. Detail and choice of such process equipment is up to the investigator's interpolative experience.

Russ Hill, Master Mechanic in charge of 67 machines for Holloway Construction Co., building 27 miles of highway . . . Albion to Battle Creek, Michigan

"Only Cat Dealers offer so many services . . . parts assembly exchanges, rebuilding, shop and field repairs and immediate availability of almost all parts."

Caterpillar Tractor Co., General Offices, Peoria, Ill., U. S. A.
Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

Enter 184 on card, page 241

Keep your eye on 25-year-old Anthony Donatelli

...Cities Service customer on the move

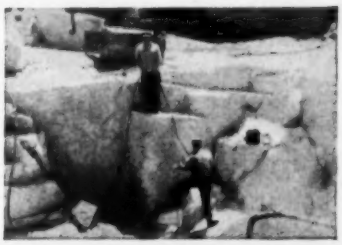
One year ago, Anthony Donatelli, Jr. took over a small quarry. It wasn't much of a quarry then. Old hands didn't think much of its chances.

But today, with the barest minimum of equipment, it is producing over 900 tons of granite per month, under young Donatelli's management.

A recent veteran of the army, Donatelli has also displayed veteran judgment as a quarry operator during this first year of operation . . . judgment that is clear in his carefully drawn plans for expansion . . . judgment that shows in his selection of Cities Service Lubricants and reliance upon his Cities Service Lubrication Engineer.

It is too early to report any maintenance records yet, but it's not too early to predict success for Anthony Donatelli. For by his reliance upon the Cities Service Lubrication Engineer he has demonstrated an all-important management talent: recognition of the usefulness of experts in the various phases that comprise any business.

Why not put your lubrication problems in the hands of an expert, too. Get the benefit of the special knowledge and economies a Cities Service Lubrication Engineer can contribute to your quarry. Call the nearest office or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.



900 Tons of Rhode Island Pink granite are now produced each month by Harrisville Quarries, Inc., Donatelli's firm. The granite is used for monuments, veneer, and general stone work.

Trucks and All Engines are lubricated by Cities Service C-300 Motor Oil. Probably the most versatile lubricant made, C-300 has chalked up an astounding series of performance records with quarry and construction equipment.

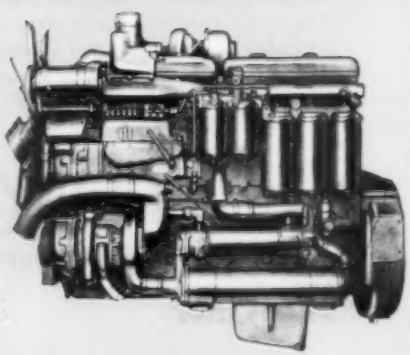
CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

Planet power steering with

gives new 230-hp TD-25 class-topping

Here's the new direct-start 6-cylinder turbocharged International DT-817 diesel that powers the TD-25. Dual valving of this high-torque 230-hp power plant provides for peak turbocharging efficiency, for full power delivery from sea level to timberline!



built-in power-shifting

capacity!

You get combined Planet Power-steering and Hi-Lo on-the-go power shifting exclusively in the new International TD-25 crawler. As standard equipment at no extra cost, the TD-25 gives you the International-developed control combination that has been beating the daylights out of king-sized clutch-steered crawlers for years!

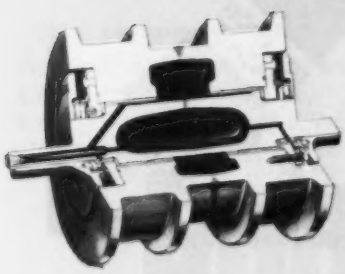
With this and all its other big advantages, the TD-25 can outearn other big rigs up to 50%—on highwalling, benching and side-casting, as well as on straight dozing to remove overburden, or to harvest minerals or building materials!

No "dead-track drag" or "gear-shift lag"! Planet Power steering gives you full-time "live" power and traction on both tracks to make full-load turns—and eliminate load-limiting dead-track drag. And Hi-Lo on-the-go power shifting instantly matches power to condition to prevent load-losing "gear-shift lag." You power-steer and power-shift the new "25" with 2-finger ease!

Hi-Lo power-shifting makes the TD-25 the industry's only 4-speed torque-converter crawler, and the only one with load-matching efficiency-range control. In the synchromesh transmission TD-25, the Hi-Lo planetary system gives eight speeds forward and reverse—with cycle-speeding up-or-down, on-the-go shifting!

Power-shift and power-steer the new TD-25 with full king-size loads—around curves, upgrade, anywhere. See what it means to command full-time, full-load ability to outearn clutch-steered king-size crawlers up to 50%. See your International Construction Equipment Distributor for a demonstration!

Keep full loads on the move full time with exclusive Planet Power steering. Full power on both tracks full time is the answer! Hi-Lo, on-the-go power-shifting lets you match power to condition—instantly—and keep the yard-boosting advantage of uninterrupted momentum. On benching or highwalling, simply operate the bank-side track in high speed range, while keeping the outside track in low range—for full-bite, full-blade performance.



Thickest-shelled roller design in the crawler industry—with king-size lube reservoirs and seal-protecting pressure-relief passages—combine to make TD-25 Dura Rollers the ones you can power-lubricate without affecting seal life or efficiency!

International® *Construction Equipment*

International Harvester Co., 180 North Michigan Ave., Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers and Bottom Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

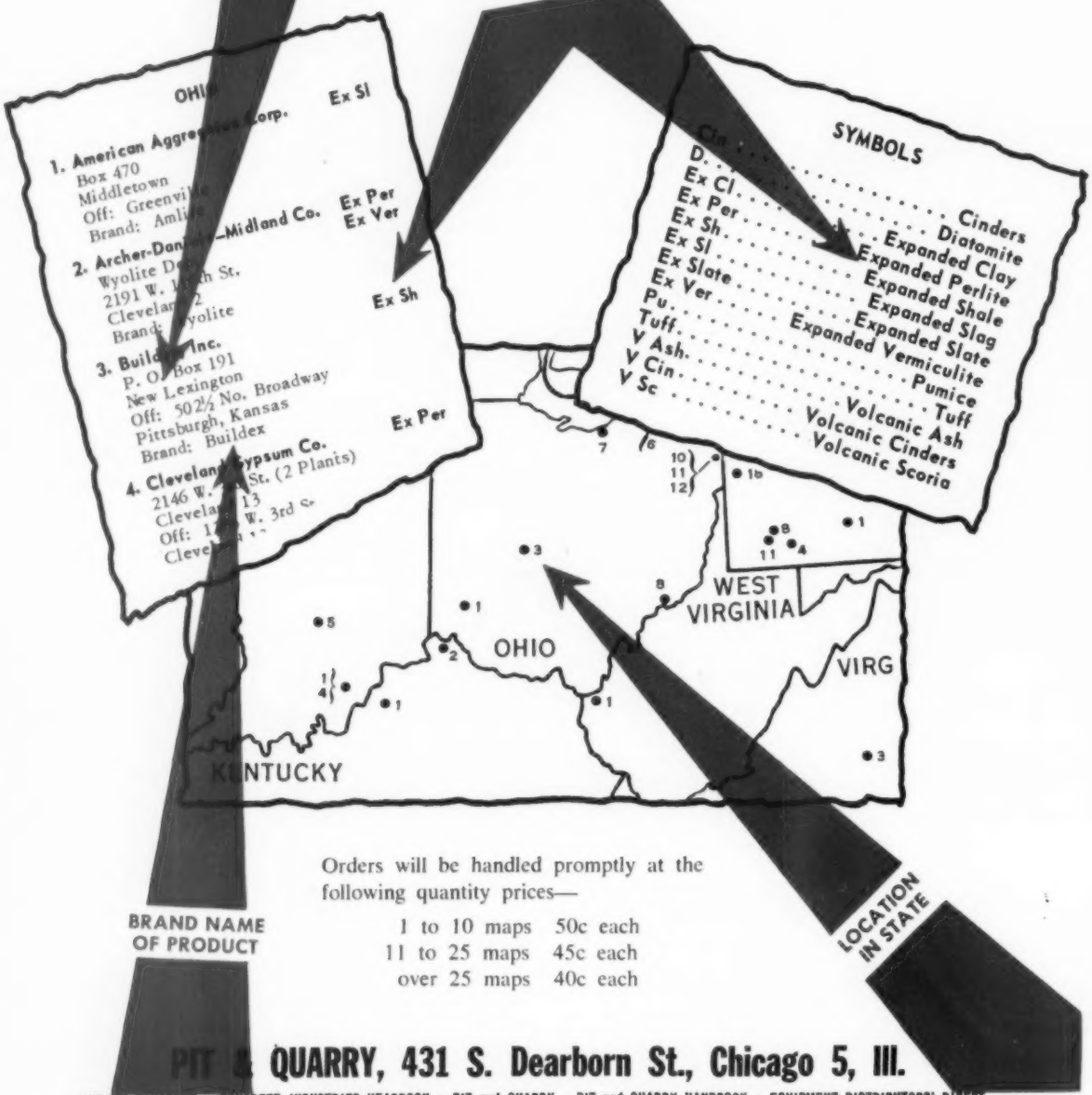
Here's what you'll find on Pit and Quarry's

BRAND NEW LIGHTWEIGHT AGGREGATE PLANT MAP

This map is big—33½ by 32 inches—and printed on extra-heavy paper suitable for framing or pasting. Listings include Canadian provinces in addition to continental United States.

NAME AND ADDRESS OF COMPANY

TYPE OF AGGREGATE PRODUCED



Orders will be handled promptly at the following quantity prices—

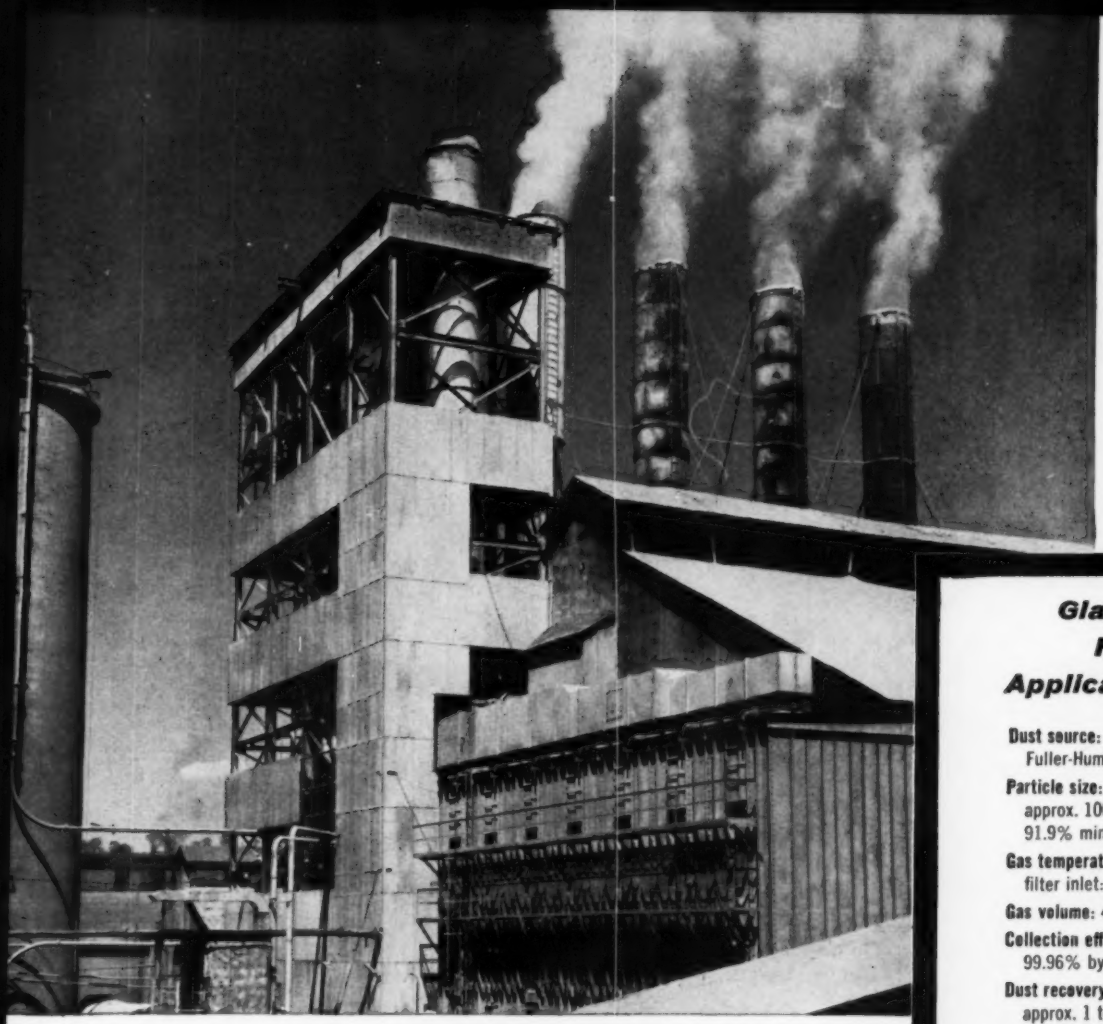
1 to 10 maps	50c each
11 to 25 maps	45c each
over 25 maps	40c each

BRAND NAME OF PRODUCT

LOCATION IN STATE

PIT & QUARRY, 431 S. Dearborn St., Chicago 5, Ill.

MODERN CONCRETE • CONCRETE INDUSTRIES YEARBOOK • PIT and QUARRY • PIT and QUARRY HANDBOOK • EQUIPMENT DISTRIBUTORS' DIGEST



Glass-Bag Filter Application Data:

Dust source: cement kiln with Fuller-Humbolt preheater

Particle size: approx. 100% minus 10 microns 91.9% minus 5 microns

Gas temperature: filter inlet: 570-600° F.

Gas volume: 42,000 cfm

Collection efficiency: 99.96% by weight

Dust recovery rate: approx. 1 ton/hour

Filter size: 7 compartments, 48 fiber glass bags per compartment

Bag cleaning method: SONOCLEAN

Dracco Glass-Bag Filter stops air pollution

The unretouched photograph shows the kiln stacks at an eastern cement plant. *All five kilns are operating!* One stack is clean because a Dracco Glass-Bag Filter is removing all visible dust from the hot kiln exhaust gas.

Results like this have made Dracco Glass-Bag Filters industry's most effective weapon against air pollution.

New performance standard

Previously the hot kiln gases would have made this an "impossible" job for a cloth bag collector. But fiber glass cloth filters, pioneered by Dracco, can collect hot, corrosive dust and fumes to 600° F. at virtually 100% efficiency.

This radically better dust collector is now available to solve the toughest air pollution problems: cement kilns, calciners, metallurgical furnaces, power boilers, chemical processes, cupolas, steam micronizers, carbon black production.

Exclusive advanced design

Dracco Glass-Bag Filters are engineered systems of modular design which operate automatically and incorporate exclusive means of cleaning filter bags. The patented SONOCLEAN unit utilizes sonics to remove all dust without cloth wear or fracture. Alternately, for light flocculent dust, the patented SWING-CLEAN mechanism uses gentle motion to dislodge difficult dusts. Both SONOCLEAN and SWING-CLEAN assure long bag life which in some cases has exceeded two years.

For further information on Glass-Bag Filters, today's most advanced equipment for air pollution or hot dust problems, contact: Dracco Division of Fuller Co., Harvard Ave. and East 116th Street, Cleveland 5, Ohio.

DRACCO *airstream* conveyors
dust control equipment

Lima announces new 5-yd. shovel, 140-ton special crane

TYPE 1800

- Standard 5-yd. shovel with 35-ft. boom, 26-ft., 10-in. dipper handle; 7 or 8-yd. dipper for coal handling
- Converts to 112-ton crane
- Variable capacity dragline

TYPE 1800SC

- 140-ton special crane with 21-ft. wide truck base for stability with big lifts
- Converts to variable capacity dragline

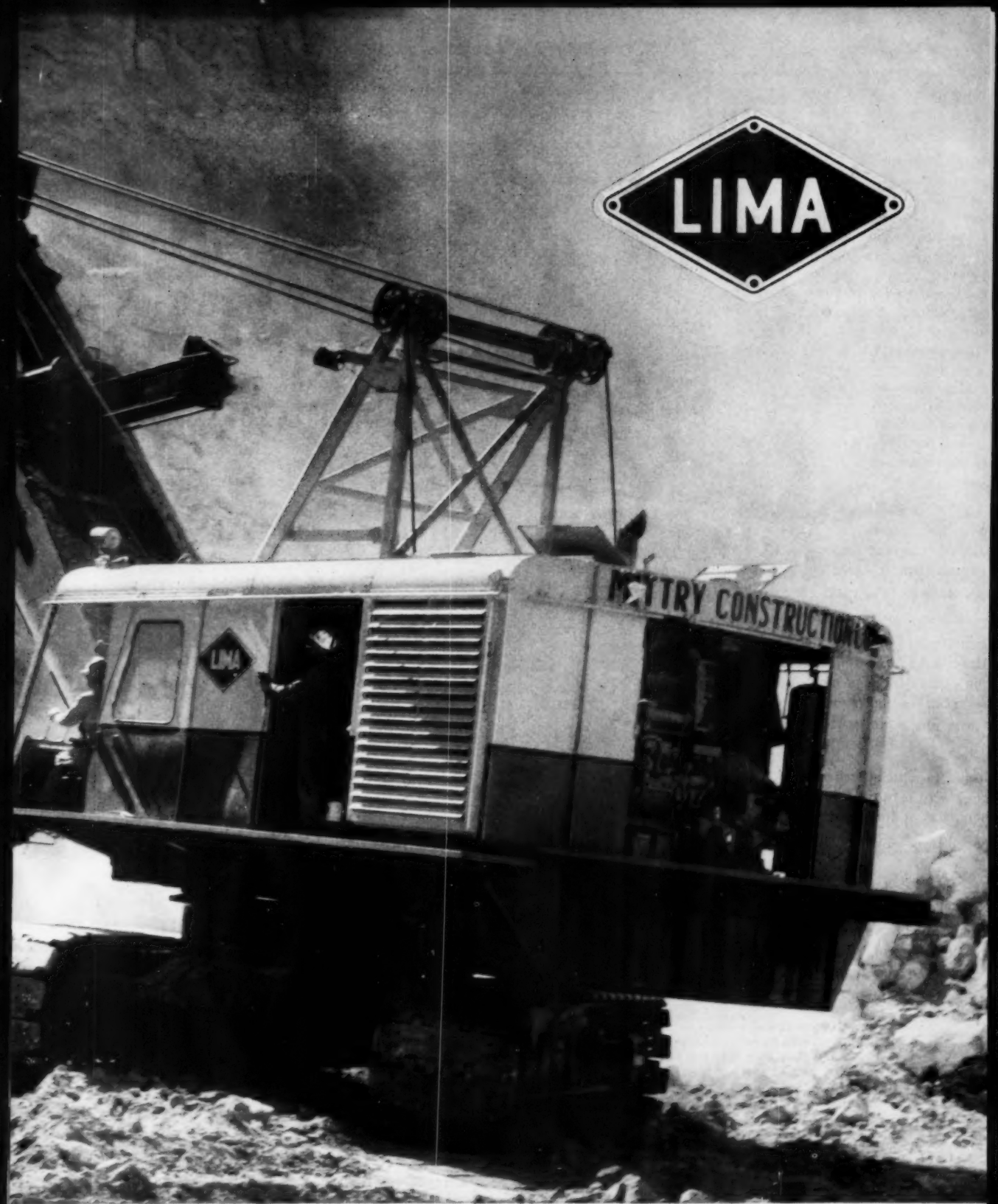
These new Limas are designed to permit knock down for job to job transportation. Side assemblies come off as a unit—including belts, crawler chains and sprockets. Counterweights are removable. Backhitch-telescopic-type gantry folds down to 17-ft., 5-in. overhead clearance.

LOW MAINTENANCE REQUIREMENTS—You get more for your money when you buy a LIMA. They last longer, perform better, and require less maintenance. Lima offers you all of these important features in a single machine—

- **Air control**
- **Torque converter drive**
- **Anti-friction bearings at all important bearing points**
- **Large diameter clutches and brakes**
- **Two-shoe-type swing-propel clutches**
- **Combination rope-chain crowd**
- **Single-inside-type dipper handle, 15″ square**
- **Extra long crane booms and special jibs available**
- **Convertible to crane or dragline**
- **9′-10¼″ dia. roller path**
- **Six cone rollers, six hook rollers**
- **Standard or long, wide crawlers**
- **Diesel or electric power**
- **Knock down for highway transportation**
- **Independent two-drum boom hoist**
- **Independent propel**
- **Auxiliary third drum**
- **Power load lowering**

FACTS AND FIGURES on the new 1800 and 1800SC are yours for the asking. See your nearby Lima distributor today or write to Baldwin-Lima-Hamilton Corporation, Construction Equipment Division, Lima, Ohio.

Lima Type 1800 5-yd. shovel—one of five Limas owned by Mittry Construction, Los Angeles. Shown excavating at Abiquiu earth fill dam project, Shama River, N. Mex.



LIMA Construction Equipment Division, Lima, Ohio

BALDWIN · LIMA · HAMILTON

Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

600

BALDWIN BLH LIMA-HAMILTON

At a ganister rock quarry on Dunnings Mountain, one of two Plymouths owned by J. L. Hartman Company is shown hauling heavily loaded cars over 5 miles of curved track with grades as steep as 8%.

"Saving time and money with our PLYMOUTH"

...the comment most users make First!

Plymouth's reliable efficiency is making continuous hauling, switching and spotting jobs more profitable for large and small companies throughout industry. Any user will tell you that substantial fuel savings per ton of material hauled is a universal benefit in Plymouth models from 3 to 80 tons.

Whether your haulage needs call for gasoline or Diesel operation, mechanical or torque-converter drive, Plymouth has the exact size and model to fit your operation. They'll expedite your production and work around the clock at surprisingly low operating and maintenance costs.

You will get all the facts promptly if you send a brief outline of your haulage needs to Plymouth Locomotive Works, The Fate-Root-Heath Company, Dept. A-15, Plymouth, Ohio.

"Quicker and more efficient in every way than our former locomotive"

—reports Mr. J. L. Hartman, Mgr. J. L. HARTMAN COMPANY Hollidaysburg, Pa.

"Plymouth Diesel operation is so superior there's no comparing it in cost with our previous steam equipment," Mr. Hartman told us, "and down-time for maintenance hardly averages 2 hours a month!"

PLYMOUTH® LOCOMOTIVES

WITH TORQOMOTIVE DRIVE

RAIL POWER

PLYMOUTH LOCOMOTIVES— in PROGRESSIVE INDUSTRY throughout the WORLD

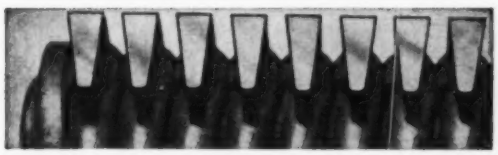
ALSO BUILDERS OF F-R-H CERAMIC MACHINERY

HOW TO SELECT DEWATERING SCREENS THAT FIT YOUR REQUIREMENTS EXACTLY

How to select Perforated Plate

Let Hendrick suggest the analysis of H Quality Steel that will stand up longest under your operating conditions. Eliminate blinding with a Hendrick screen that provides full clearance. Get continued product uniformity from the accurate, uniform mesh of a Hendrick screen.

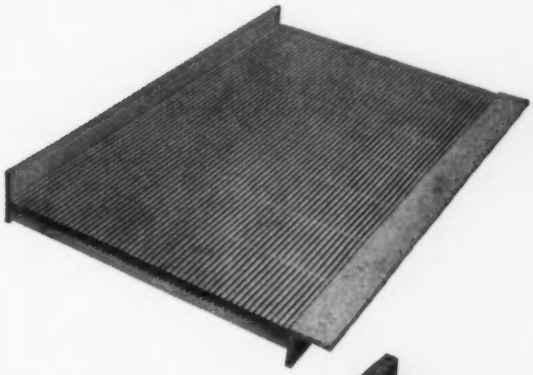
How to select Wedge Wire

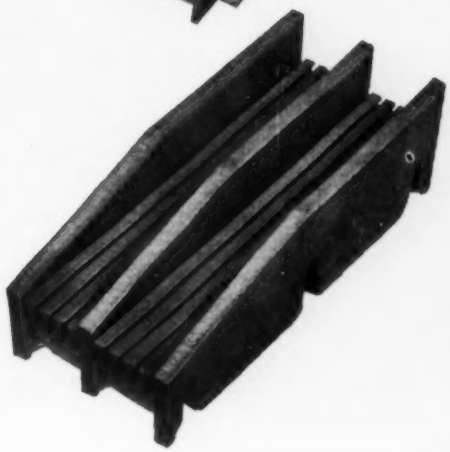


Here are three things to look for: 1) Free clearance—to reduce chances of clogging and blinding. 2) A tapered profile bar, for dewatering efficiency. 3) A deep profile bar, to assure long service life and maximum load-carrying capacity. Get all of these in Hendrick Wedge Wire. There is a type to suit your operating conditions and your needs—whether you want good screening efficiency, good dewatering efficiency, or high resistance to abrasion.

How to select Wedge Slot Screens

For more efficient processing, look for accurately spaced, uninterrupted slots. For heavy-duty service, look for thick, parallel head flanges that maintain uniformity of openings. To prevent abrasion by large chunks, specify Skid Bars. Hendrick offers all of these—*plus* 8 different profile bars. Hendrick will gladly help you select the type that will stand up best under your operating conditions.





Hendrick

MANUFACTURING COMPANY

Headquarters for All Your Screening Needs

39 DUNDAFF STREET, CARBONDALE, PA.

Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Hendrick Wedge Wire Screens • Architectural Grilles • Mitco Open Steel Flooring — Shur-Site Treads • Armorgrids • Hydro Dehazers • Distillation Column Internals

Hendrick Manufacturing Co.
39 Dundaff Street, Carbondale, Pa.

Please send me your catalog on:

- ☐ H Quality Steel Perforated Plate
- ☐ Wedge Slot Screens
- ☐ Wedge Wire
- ☐ I would appreciate a call from a Hendrick Sales Engineer.

Name_____

Company_____

Address_____

City_____ Zone_____ State_____

Question 1:

What's <u>different</u> about Haulpak®?

ANSWER: The LW Haulpak is like other off-road trucks *only* because it has wheels and an engine! Otherwise, its design is completely different... for your benefit. For instance:

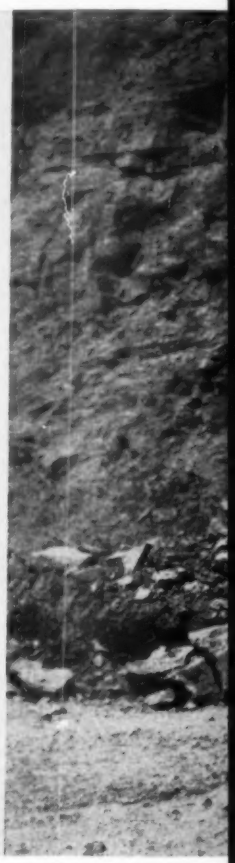
RIDES ON AIR — Other trucks ride on steel springs that need much attention. Haulpak eliminates this major cause of downtime with the exclusive LW HYDRAIR* suspension system. With it, Haulpak *rides on air*... the load rides smooth and level on rough roads. You can safely use faster hauling speeds, move more tons per hour. Hydrair also makes possible many other advantages:

SHORTER TURN RADIUS — Because Hydrair suspension eliminates need for conventional springs and

Notice the deep "V" body which permits Haulpak to carry about 25% of its load *below* what would be the floor line of a conventional hauler. This gives greater stability, permits faster travel on turns and steep grades. ▶

Here's HYDRAIR

This sturdy, simple air-hydraulic suspension replaces the usual leaf springs found in conventional off-road equipment, relieving Haulpak owners from expensive spring repair and maintenance. Hydrair cushions against loading and travel shocks, compensates automatically for off-center loading, and keeps the load riding level over bumps and holes, for faster, more profitable hauling cycles.



Question 2:

How does Haulpak <u>save you</u> money?

ANSWER: From the answers above you can easily see how this all-new hauler *saves* on hauling costs, gives you:

- **greater maneuverability**
- **lower operating cost**
- **lower maintenance**
- **faster hauling**
- **more pay-tons per hour**
- **...and bigger profits**

front axles, Haulpak's front wheels can be turned at sharper angles . . . permits U-turns in 2/3rds the space required by competitive trucks. And without need for springs and axles, Haulpak can be built with a shorter wheelbase for more efficient transfer of power-to-wheels. There is, however, no loss in load capacity, because you get the LW exclusive . . .

DEEP "V" BODY — This permits carrying about 6 tons of material *below* the normal floor-line of conventional trucks. It also gives you a lower center of gravity, better stability on turns and steep grades.

HAULS THROUGH DEEP MUD — Haulpak is equipped with the famous LW power-transfer differential, used for many years in thousands of heavy-duty Tournapull® earthmovers all over the world. When one drive wheel begins to slip, power is transferred automatically to the wheel on firmest footing. Soft going does not stop Haulpak!

MANY OTHER MONEY-SAVERS! You save on fuel, because Haulpak is built of the newest lightweight high-tensile strength steels . . . to reduce deadweight and increase pay-load. Also, Haulpak gives you power-shift Torqmatic transmission, full power-steering, multiple-disc brakes with 5,148 sq in. total braking surface, double-acting hydraulic rams that lift body to 70° tilt in 16 seconds for fast dump. And lubrication check is reduced to only 3 easily-reached fittings needing attention only at 500-hr intervals. Haulpak is not just a "beefed-up" highway truck . . . it is a totally new concept developed to cut off-road hauling costs.

Next time you need an off-road hauler, investigate Haulpak. Now available in 3 sizes: 22, 27, and 32 tons capacity. Request literature, and ask to see our new color movie, "*Revolution on Wheels*".

*Trademark HP-2261-G-2

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

Manitowoc...

pick of the pits for big capacity

DIGGING
LOADING
STOCKPILING

LOADING RIP-RAP in Dayton, Ohio, this 2½-yd. Manitowoc maintains high output under any conditions.

◀ DIGGING GRAVEL is the job assigned to a 4-yd. drag in Dallas. Equipped with a 100 foot boom, the rig averages 400 yards per hour.

DREDGING SAND AND GRAVEL in Ohio, the 6-yd. dragline shown reaches 45 to 50 feet below the water for gravel.

CHARGING BINS for a county asphalt plant, this 1¼-yd. Manitowoc handles 850 tons of material each shift.

There's good reason why Manitowoc shovels and draglines are the "pick of the pits" in every area of the rock industries. You can't beat a powerful Manitowoc for *long term* big output. And, you get more years of service from your investment.

The time-tested Manitowoc power train is the most simple in the industry. Every unit of horsepower carries a full work load — there's no wasted energy. The result of power-saving design is a work cycle that is faster, smoother, and more efficient. Pit production increases. Service and maintenance costs stay at the lowest level.

For loading rugged rock or abrasive aggregates, your Manitowoc has a high strength alloy steel boom welded in tubular shape; rigid, dual dipper sticks; and the solid stability that can't be matched by other types of material handling equipment. It's a quarry-proved machine — ready for anything!

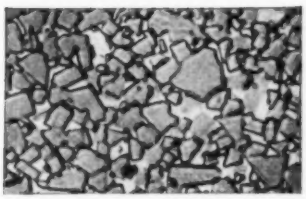
Make a point to get further information soon on the great *new* line of Manitowocs — call your helpful distributor.

Manitowoc

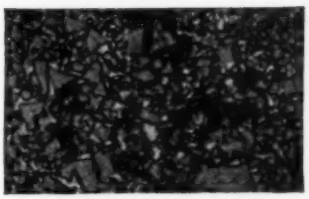
SHOVELS AND DRAGLINES 1¼ to 6 Yds.

MANITOWOC ENGINEERING CORP.
(A subsidiary of The Manitowoc Company, Inc.)
MANITOWOC, WISCONSIN

Longer bit life— with *new* Sandvik Coromant Bits



Sandvik Coromant Tungsten Carbide (Microphoto) Uniformity of size, even distribution of grain are marked. Free from porosity and impurities —therefore stronger, longer-lived.



Low quality Tungsten Carbide (Microphoto) Black marks are contaminations caused by deficient production control. They weaken the carbide, reduce its working life.

NEXT time you buy bits, specify Sandvik Coromant because they give more footage per bit, lower drilling costs. Here's why:

1 Only first-quality tungsten carbide is used —as shown in the microphotos above. This means less wear, longer life and a better job.

2 The bodies are precision-made of high quality alloy steel—tough enough to take the strain throughout the extra-long bit life.

3 The bigger Sandvik Coromant bits are all of X-design, which prevents rifling. No wonder Sandvik Coromant inserts are the most widely used in the world, drilling more than one billion feet every year.

SANDVIK COROMANT bits are supplied through Atlas Copco, the world's largest manufacturer of rock drills, who also supply Sandvik Coromant integral steels — the most widely used in the world — and Sandvik Coromant extension steel equipment.

Sandvik Coromant Detachable Bits are Available in the following Thread Sizes and Bit Diameters

Available Diameters, in Inches

Type	Thread	1¼	1⅜	1½	1⅝	1¾	1⅞	2	2⅛	2¼	2⅜	2½	2¾	3	3½	4	4½	5
SHOULDER	TAPER	x	x	x	x													
	F		x	x														
	113		x															
	H			x	x	x	x	x		x								
	115			x	x													
	D						x	x	x	x	x	x	x	x				
	K													x	x	x	x	
BOTTOMING	1" Rope				x	x	x	x		x								
	1¼" Rope						x	x	x	x		x		x				
	400						x	x		x		x						
	1½" Rope											x	x	x	x	x		
	600											x	x	x	x			
	700													x	x			
	J7.5															x	x	
	2" Rope														x	x	x	x
	1000																x	

Write or phone today for further details to either of the addresses below:

610 Industrial Avenue
Paramus, New Jersey
COlfax 1-6800

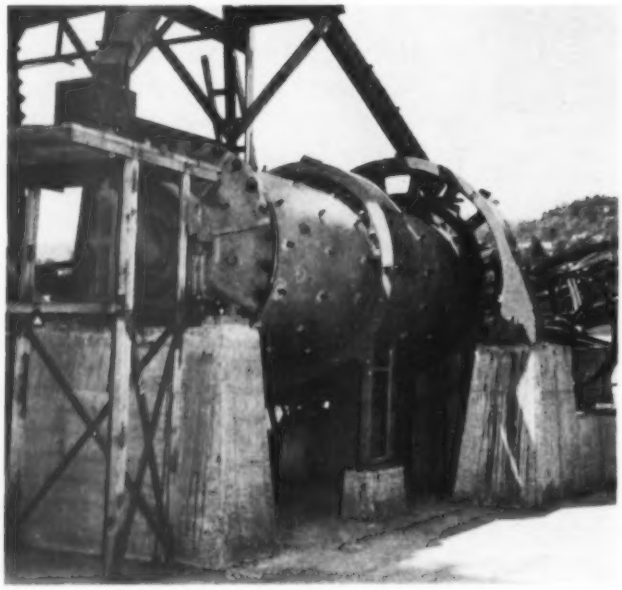
Atlas Copco

930 Brittan Avenue
San Carlos, California
LYtell 1-0375

Enter 197 on card, page 241

How small sand producers can beat the competitive squeeze with MARCY MILLS

Specification sands for most of the large government dams throughout the world have been produced by use of Marcy Center Peripheral Discharge Rod Mills. Also, large commercial sand producers have, for many years, used Marcy Mills to make a better product and increase their profits.



Here's how small producers can profitably use Marcy Mills...

- **Make a profit out of waste material.** By grinding waste pea gravel you not only make an additional profit from waste material, but also eliminate a stockpiling problem.

- **Increase sales by making a better product.** Grinding, compared with crushing, makes a more uniform, cubical product which makes better concrete...thus, gives you an opportunity to increase sales, by having a better product.

- **Increase markets by meeting a wider variety of specifications.** Marcy Mills provide a flexibility which permits changing the gradation of finished product to meet a wide variety of specifications.

Capacities from 2 to 200 dry tons per hour.

For complete details, write to

Manufacturing Division

MINE AND SMELTER SUPPLY CO.

DENVER 16, 3800 RACE ST. | NEW YORK 17, 122 E. 42nd ST. | SALT LAKE CITY 1, 121 W. 2nd S. | EL PASO, 1515 11TH AVE. | ALBUQUERQUE, 701 HAINES N.W.

Licensed Manufacturers and Sales Agents in Canada, Australia, Sweden, England, South Africa
Sales Agents in Peru, Chile, Philippine Islands, Japan, New York City (for Continental Europe) and in principal cities of the United States.

The Company that cares enough to give you the best!

Legal Decisions

On Industry Problems

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

Corporation Solely Liable

ACCORDING to a decision rendered by a higher court only a few weeks ago, a corporation is liable for payment for all materials and merchandise which its officials accepted, irrespective of the names on the sales or delivery slips. Hence, neither individuals nor officials of the corporation are personally liable for payment for these materials.

For example, in *Georgetown Sand & Gravel Company* v. *Burr*, 157 N. E. (2d) 413, the testimony showed that a corporation was organized under the name of Webb Construction Company, Inc. The Georgetown Sand & Gravel Co. furnished material to the corporation and the delivery slips read "Webb Const. Co.," "Webb Const.," "Web Const.," "Webb Construction Co.," "Webb," "Webb Job," and "Webb Estate." The Webb corporation became bankrupt and the legal counsel for the Georgetown Sand and Gravel Co. contended that the officials of this corporation must pay for the materials accepted under various names, not under the corporation's name.

The higher court held that the Webb corporation is solely liable to Georgetown Sand and Gravel Co. for all materials purchased and later delivered to the latter company, and that there is no payment coming from individuals or officials of the corporation. The court said:

"The delivery slips from plaintiff (Georgetown Sand and Gravel Company) read 'Webb Const. Co.,' 'Webb Const.,' 'Web Const.,' 'Webb Construction Co.,' 'Webb,' 'Webb Job,' and 'Webb Estate.' These sales were to corporation, and individual defendants (officials) were not liable."

Unlawful to Pass on Right

Last month a higher court rendered an interesting decision which quite clearly answers a legal question often presented in the past by various readers.

In *Wachter v. Cuen Sand and Gravel Company*, 96 N. W. (2d) 597, it was shown that one Wachter was driving his automobile on a two-lane highway. A loaded gravel truck, driven by one Peterson, was likewise proceeding south in the same direction on the highway. Wachter first observed the truck when it was on the left side of the highway, moving at a slow speed. Wachter slowed his speed somewhat, but as he neared the truck it was still on the left side of the road, and he decided to pass it on its right. The truck suddenly swung to the right across the pavement and caught Wachter's car between the truck and the side of a bridge, dragging it for some distance and causing severe injuries to Wachter. He sued the truck owner for heavy damages, amounting to $16,249.00. The truck was equipped with a two-wheel trailer loaded with gravel. The entire outfit of the truck and trailer was about 37 ft. long.

It is interesting to observe that the higher court refused to award Wachter any damages, saying."

"If he (Wachter) had not been passing on the right he would not have been struck."

This higher court further explained that where undisputed evidence disclosed that a motorist was attempting to pass another vehicle on the right side thereof, the motorist is contributorily negligent as a matter of law.

For comparison, see *Rodgers* v. *Blandon*, 294 Mich. 699. This court said:

The Company that cares enough to give you the best!

Laboratory Equipment

4"x 6" Massco Laboratory Jaw Crusher

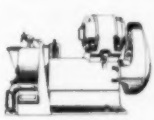
Welded steel frame; manganese steel jaw and cheek plates; bronze bushed bearings; smooth jaws give better product and easier cleaning. Adjust for plate wear and product size by convenient hand wheel adjustment.

6" and 10" Massco Gy-Roll Reduction Crusher

Reduces ½" feed to as fine as 10 mesh in single pass. High capacity, low power consumption.

Laboratory Crushing Rolls

Sizes (Diameter x width): 8"x 4", 10"x 6", 10"x 8", 12"x 10" and 12" x 12". Adjustable roll space setting up to ¾". Double V-belt drive. Heavy, cast Meehanite frame absorbs vibration, results in long life.



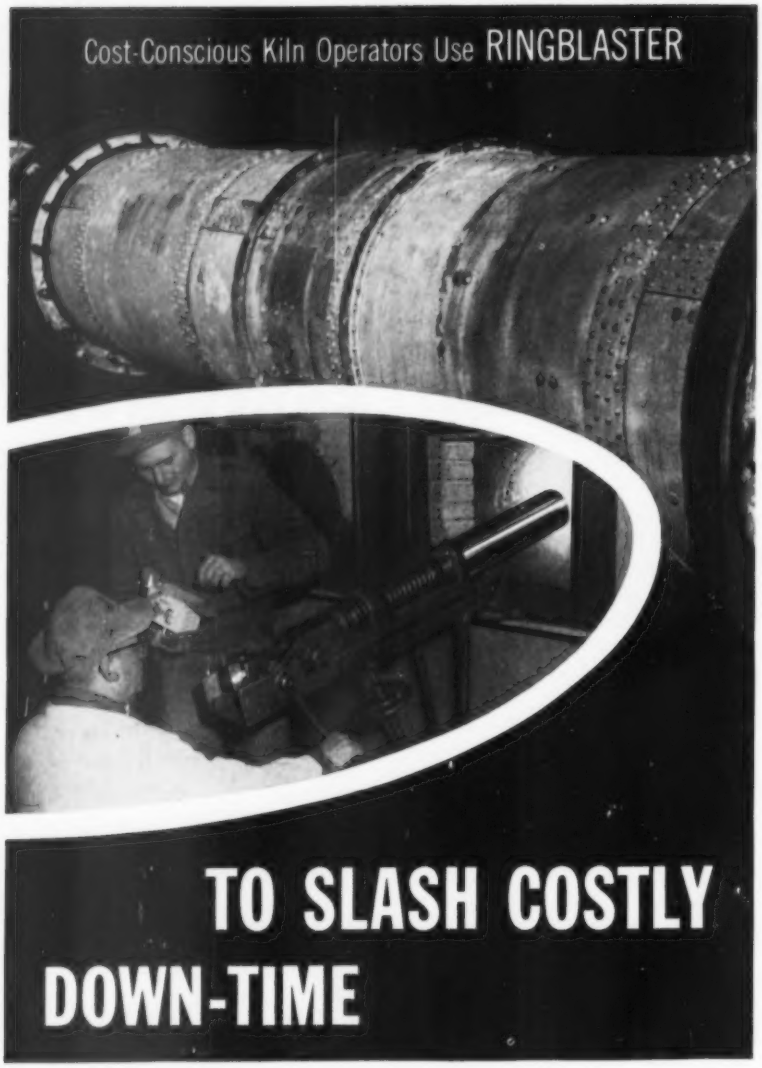
Massco-McCool Pulverizers

Disc type grinder with a planetery movement. No gears. Will grind ¼" to 150 mesh in one pass.

Marcy Pulp Density Scale

Gives direct reading of weight; specific gravity of liquids, pulps, and dry solids; percent solids in pulp. Very accurate. Easy to clean.

MINE AND SMELTER SUPPLY CO.
3800 RACE STREET • DENVER, COLORADO
OFFICES AND AGENTS IN PRINCIPAL CITIES
Enter 199 on card, page 241



You'll profit with Ringblaster . . . the kiln gun that smashes kiln rings with exceptional speed and precision. Utilizing field-tested Western Super-X ammunition, Ringblaster breaks up rings faster, with fewer shots and less kiln down-time.

With special emphasis on safety, this industry-accepted kiln gun operates easily and efficiently . . . exclusive sound-reducer deadens firing noise and promotes worker comfort. Ringblaster can help make *your* kiln operations more profitable. Write today for further information.

Super-X Shell—For use in kilns over 150' long. Develops 8900 ft. lbs. of muzzle energy—breaks hard rings quickly and efficiently.

Reduced Velocity Shell—Lower-powered (approximately 7500 ft. lbs. muzzle energy) for ultimate efficiency in shorter kilns . . . minimizes possibility of damage to end plates, feed pipes, etc.

Super-X Zinc Shell—Extra-large zinc slug penetrates toughest rings. Use them with Super-X lead slugs for maximum penetration and "knock-down" power.

RINGBLASTER®
KILN GUN

another product by
Ramset® Fastening System

OLIN MATHIESON Chemical Corporation
WINCHESTER-WESTERN DIVISION
300 Winchester Ave. • New Haven 4, Conn.

Enter 200 on card, page 241

"In this state, it is negligence as a matter of law for a vehicle approaching another from the rear to pass it . . . on the right-hand side."

How to Win Condemnation Suits

Recently I received an interesting letter from an official of a large quarry corporation which contained the following problem and query: A city condemned and appropriated 2 acres of our quarry land for a waterwork system. In the law suit the jury awarded our company $18,000.00 payment for this land. We contend that we should be paid $80,000.00. What procedure can we use in the higher court trial to have the jury's verdict reversed?"

The answer is: You should introduce testimony before the higher court in reference to all details of the past uses and future prospective profits to be derived from the 2 acres of appropriated land. Also, prove that appropriation of this 2-acre tract damages the remainder of the tract, and give reasons why this is so. By good reasoning invalidate improper methods used by the city to induce the jury to put a low valuation on the land.

I shall review in considerable detail a legal controversy decided a few weeks ago in which the higher court reversed a jury's award of $625,000.00 for condemnation of quarry property which the owner contended should have been approximately $3,466,435.00.

For illustration, in *County of Cook* v. *Vulcan Materials Company*, 158 N. E. (2d) 12, the testimony showed facts, as follows: The Vulcan Materials Company owns 39 acres of land immediately north and 26 acres south of Harrison Street. A quarry pit occupies the northwest 21 acres of the 39-acre tract plus 6.7 acres immediately west thereof on an 8-acre tract leased for quarrying. In the southwest 2 acres of the remainder of the 39-acre tract, a small plot is leased to Allied Asphalt Paving Company, upon which is located an asphalt plant. The remaining 16 acres are occupied by limestone processing facilities, ready-mix concrete aggregate plant, auxiliary buildings and improvements, railroad service and switching tracks, and stock piles of sand, gravel, and processed stone. The Vulcan Materials Company maintains an office

building, garage, machine shop, and various wooden buildings and dwellings upon the northerly part of the 26-acre tract, and another 1½ acres is leased to Seneca Petroleum Company, which maintains a second asphalt plant thereon. The remaining southerly 20 acres had been occupied by Lewistown Pipe Company, as a concrete pipe plant where various sizes of sewer pipe were poured and stored.

A suit was filed by the county to condemn a 12-acre strip for an expressway through this land. The county officials introduced testimony showing that the highest and best use of the 2 acres was industrial, and fixed the value of the lands to be condemned at $239,500.00 and $237,500.00, respectively, with no damages to the remainder not taken. Also, the county officials introduced testimony as to the book value of the land, the balance sheets, tax assessments against the property, etc., etc.

As above mentioned, the jury awarded the Vulcan Materials Company $243,000.00 as compensation for the land taken and $382,000.00 for damages to the land not taken.

Vulcan Materials appealed to the higher court and introduced testimony of expert witnesses on the highest and best use, geological data, and land values. They also gave proof of the location, thickness, depth below the surface, quantity, quality, and quarryability of this and other limestone deposits, quarry methods, and their problems. The complicated evidence ranged through limestone crushing and processing, ready-mix concrete aggregate and asphalt plant operation; land, plant, and machinery values; zoning laws; and much technical evidence including plans, maps, charts, and computations. Also, the lawyers representing Vulcan Materials Co. contended that the whole 65 acres is a going quarrying unit and that the taking of the 12 acres would so separate their pit and plants from the segment left to the south as to make it uneconomical to quarry the stone therefrom. Their four valuation witnesses testified that the highest and best use for all of the 26 acres was quarrying. Such witnesses fixed the value of land taken from $1,446,435.00 to $1,858,500.00 and damages to land

H-R SECTIONAL CONVEYORS:

Right for the big jobs too!

The world's largest aggregate plant, in Niagara Falls, N. Y., built in connection with the New York Power Authority's $700,000,000 hydro-electric project, has an aggregate capacity of 2,200 tons per hour. Some highlights:

- All conveyors, screens, and conveyor speed reducers by Hewitt-Robins.
- Twenty-seven big 6′ x 16′ Vibrex screens—most shipped from stock.
- Approximately two miles of sectional conveyors and standard bents—many units shipped from stock.
- Eighteen Jones speed reducers.

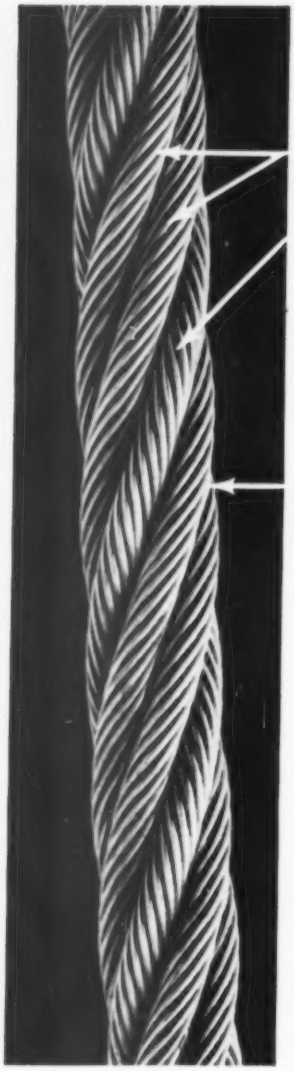
For further details, consult your H-R representative, or write Hewitt-Robins, Stamford, Connecticut. Ask for Bulletin 1-24.

HEWITT-ROBINS

CONVEYOR BELTING AND IDLERS . . . POWER TRANSMISSION EQUIPMENT . . . INDUSTRIAL HOSE . . . VIBRATING FEEDERS, SCREENS & SHAKEOUTS

H-R Product Manufacturing Plants in Buffalo, N. Y. • Chicago, Ill. • King of Prussia, Pa. • Passaic, N. J. Amsterdam, Holland • Brussels, Belgium • Genoa, Italy • Johannesburg, South Africa • London, England Montreal, Canada • Paris, France

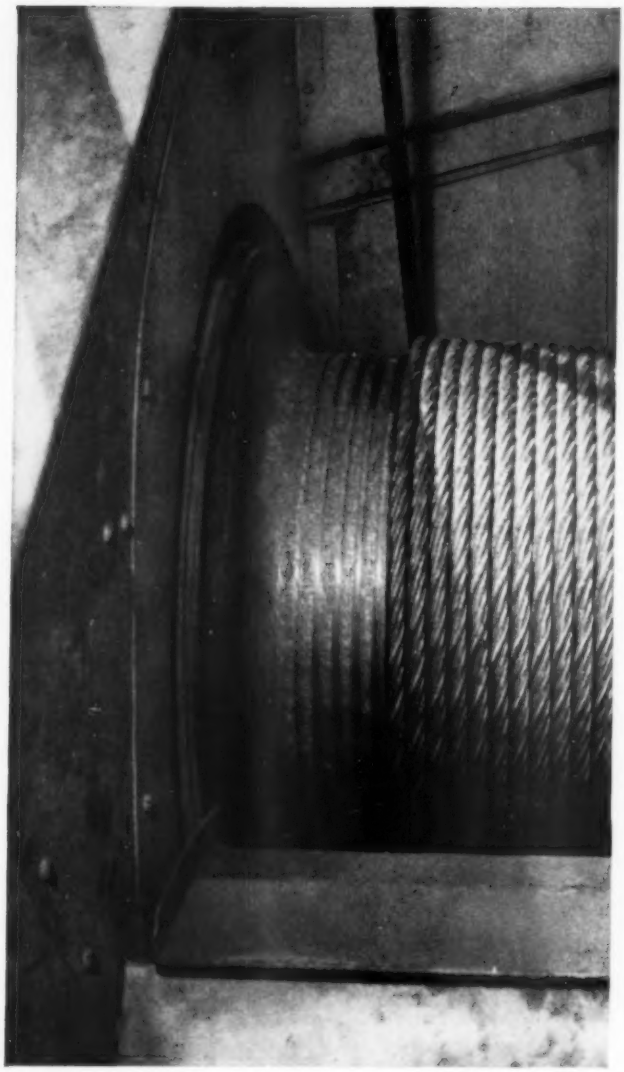
Enter 201 on card, page 241



Herringbone's two pairs of Lang lay strands and one pair of regular lay strands provide the ideal combination of maximum flexibility with good stability.

Finer wires inside contribute to Herringbone's excellent drum-winding characteristic.

Heavier outside wires in each strand have greater resistance to abrasion.



"...we would never hesitate to recommend it"

GRAY & FEAR, CONTRACTORS

This company continues: **"We have been using your Roebling Herringbone* for about one year. We find it is one of the best ropes we have ever used, outlasting previous ropes three to one. It is good that such a reliable rope is available."**

This is a direct field quote on the most remarkable development in wire rope in years...a new concept in wire rope design. Roebling Herringbone is the regular lay and Lang lay wire rope—two-ropes-in-one rope—combining the best features of both.

Herringbone delivers extra flexibility, extra abrasion resistance, unusual structural stability, extra resistance to shock, easy operation over sheaves and drums and smooth spooling properties.

We recommend Herringbone without reservation for general hoisting and the entire range of heavy-duty equipment. Your Roebling Distributor or Roebling's Wire Rope Division, Trenton 2, New Jersey, will give the full and fabulous details. *Reg. App. For

ROEBLING

Branch Offices in Principal Cities
John A. Roebling's Sons Division
The Colorado Fuel and Iron Corporation

Cedarapids Built by IOWA

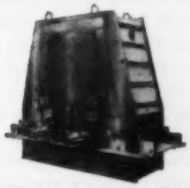
Here's why more crushed stone producers turn to CEDARAPIDS

- *greater tonnages*
- *higher quality products*
- *lower production costs*

● This Cedarapids-engineered Stationary Plant is designed to produce seven different sizes of high-quality crushed limestone at a 300 to 350 ton per hour rate, with 90% crushing! A Cedarapids 4033 Hammermill occupies the key position, while a 4350 Double Impeller Impact Breaker handles the primary breaking, and three 48″ x 12′ Horizontal Vibrating Screens grade the material to the specified sizes. That's the way one producer utilizes the high capacity, high efficiency of Cedarapids equipment to meet market demands for quality crushed stone with profitably low costs.

For profitable production in quarries all over the country, depend on Cedarapids quality-built components, fully-engineered by Cedarapids crushing and screening experts into Stationary Plants that assure greater tonnages, better quality products, and lower production costs.

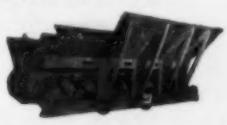
CEDARAPIDS OFFERS A COMPLETE LINE OF QUALITY-BUILT, HIGH-CAPACITY COMPONENTS



DOUBLE IMPELLER IMPACT BREAKERS in six models give you whatever output you need up to 1000 tons per hour. High percentage of material broken in suspension results in high reduction ratio, low horsepower requirements.

ROLL CRUSHERS in 6 sizes with 3 types of roll shells insure high capacity of the smaller size finished products you want. Single and Twin-Jaw Primary Crushers also available in 18 sizes.

HORIZONTAL VIBRATING SCREENS provide 12½% greater screening area than inclined screens of the same size. Sizes from 3′ x 8′ to 60″ x 16′, double or triple deck.



HEAVY-DUTY FEEDERS designed to feed big crushers with a smooth, workable flow of material, and withstand the shock of heavy dumping.

Want lowest cost per ton?

buy Cedarapids Built by IOWA

CEDARAPIDS HAMMERMILLS combine an impact breaking and milling action which results in the uniform cubical-shaped crushed stone and ag-lime that assures repeat orders. And you get the big hourly output that fills those orders at a profitable low cost per ton. A wide range of production needs can be met with three models. Get complete details from your Cedarapids Dealer. Call him today.

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa

AUTOMATIC BATCHING HANDBOOK

EVERYTHING YOU NEED TO KNOW ABOUT AUTOMATIC BATCHING

- HOW TO DO IT
- HOW MUCH IT COSTS
- WHAT YOU NEED
- HOW TO USE WHAT YOU HAVE
- HOW TO SELECT THE RIGHT SYSTEM

If you are now combining two or more ingredients in any kind of formula or batch, write now for this new *free* automatic batching handbook. It describes in detail how automatic batching works, how to convert existing plant facilities or plan new plants for automatic operation. It illustrates the latest batching systems available, lets you select the right type for your particular needs. Also shows you how to combine materials handling equipment, storage facilities, and weighing equipment for greatest economy, increased production. This is the newest, most complete handbook on automatic batching available—be sure to write for your free copy today!

HOWE

THE HOWE SCALE CO. • RUTLAND, VT.

A SUBSIDIARY OF SAFETY INDUSTRIES, INC.

Enter 204 on card, page 241

not taken from $1,164,750.00 to $2,216,700.00. In view of this testimony, the higher court reversed the jury's verdict, explaining its reasons, saying:

"We are of the opinion that the balance sheet was not relevant to the issue of fair cash market value and should not have been admitted in evidence. We have held that statements of value for tax assessment purposes are inadmissable in condemnation proceedings on the issue of market value for the reason that they are not and do not purport to be statements of market value."

With respect to the book value of the property being used as a basis for determining the value of the property, this court said:

"It is a well known fact that there may be a vast difference between book value and actual or fair cash market value. Book value normally represents cost less reserves for depreciation and depletion. The amount of the reserves is often dictated by expediency. Taxpayers take advantage of the faster depreciation to save taxes in large income years and to keep up their cash reserves. Banks and financial institutions often charge their banking house and fixtures down rapidly and, in many cases, charge them off completely in order to improve their statements. Each of these and similar methods tend to reduce the book value far below actual value. The award for the land taken was inadequate, inconsistent, and against the manifest weight of the competent evidence in the record."

Employee Allowed Damages

An official of a large nonmetallic corporation asked this legal question: If a corporation hires an employee for a year and discharges him before the year has expired, can the employee sue and recover damages?

According to a late higher court decision, the employee can recover heavy damages. For example, in the leading case of *Cavalier* v. *Weins*, 80 Atl. (2d) 918, the testimony showed that a man named Weins was employed by a corporation for a period of 1 year at an agreed salary of $125.00 per week. Weins continued in the employment for

(*Continued on page* 209)

in the last two years over 210 multiwall users cut their packaging costs through a UNION-CAMP

PLANT SURVEY

another FREE service of the 5 Star Packaging Efficiency Plan!

UNION-CAMP's 5-Star Plan has helped over 210 firms reduce their materials handling costs within the last two years alone. The economies resulted directly from a single service feature of the plan . . . a plant survey.

One survey, made for a midwest packer, speeded his multiwall handling operation by 50 per cent. Another company, by following UNION-CAMP recommendations, released labor for more productive functions and saved $37,584. A third multiwall user lowered his costs by nearly $50,000 a year. And there are many more such success stories.

A UNION-CAMP multiwall specialist will be glad to review your present operation . . . show you how the 5-Star Plan can help produce more economical, more efficient control. The plan also covers bag design, bag construction, specifications control and packaging machinery. It's yours without cost or obligation.

Why not start cashing in on it today?

UNION-CAMP
MULTIWALL BAGS
Union Bag-Camp Paper Corporation 233 Broadway NY 7 NY

5 BAG DESIGN · BAG CONSTRUCTION · SPECIFICATIONS CONTROL · PACKAGING MACHINERY · PLANT SURVEY

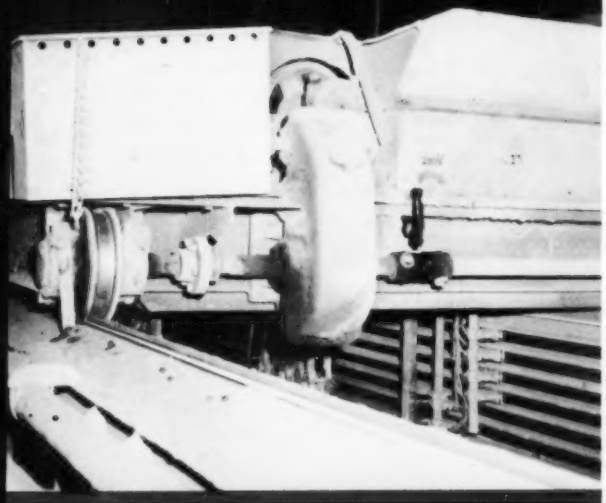
TSP Pinions on cooler kilns.
TSP Bevel Gear and Pinion on burner kiln main shaft.
TSP
hardened products in service since 1917 at NORTH AMERICAN CEMENT
NORTH AMERICAN CEMENT CORPORATION
TSP Pinions drive this pre-grid mill.
TSP Pinions drive these mills.
TSP Gearing and Trunnion wheels on all kilns.
TSP Trunnion on burner kiln. Note "mirror surface" even after 13 months' service.

TSP Gudgeons on screw conveyors.

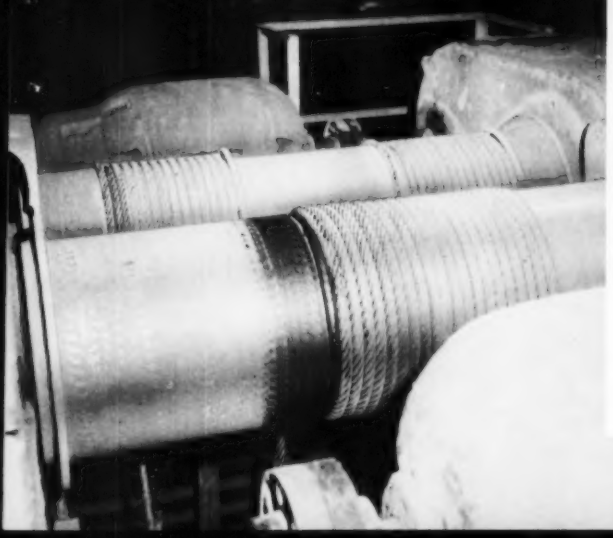
TSP Mill Drive Gears.

TSP Mill Bull Gear.

TSP Wheels on overhead cranes.



TSP Rope Drums on overhead cranes.



TSP hardened products, a few of which are shown here, are in wide use in all North American Cement Plants . . . and for very good reasons. Each year they save thousands of dollars in replacement costs alone. In addition, equipment runs better and longer, drastically reducing expensive 'downtime' costs.

"Tool Steel Process" products have superb quality and outstanding wear characteristics, a result of a special hardening process. A file-hard surface to the full depth of permissible wear gives maximum life. The core, refined for toughness and ductility, gives maximum strength. They are also guaranteed in writing to outperform any competitive product in the same service. That's why North American Cement and practically every other leading cement plant in the country have been big users of TSP hardened products for many years.

TSP products are made to order, or to fit existing equipment. Modern gear cutting machines produce gears in sizes up to 197" outside diameter. Other products up to 20,000 lbs. weight. Write today for fully illustrated brochure—"TSP Products for the Cement Industry."

THE TOOL STEEL GEAR AND PINION CO

MEMBER OF AGMA

CINCINNATI 16, OHIO, U.S.A.

The Standard of Quality Since 1909 for Gears, Pinions, Rolls, Wheels and Other Hardened Products

AD 1038 — Printed in U.S.A.

ROUGH ON ROCKS!

Cape An Alloy
FORGED
DROP BALL

When the "Cape Ann" steel Drop Ball starts working 'em over in your quarry, *rocks never had it so bad!*

These new, forged and heat treated units provide record tonnages on a high-economy basis.

Extremely tough and abrasion-resistant, "Cape Ann" Drop Balls are sonic tested before shipment and fully guaranteed—the perfect solution to secondary breakage difficulties.

They're available in sizes from 2,000 to 12,000 lbs.

Write TODAY for full details

CAPE ANN
ANCHOR & FORGE CO.
P.O. BOX 360
GLOUCESTER • MASSACHUSETTS

Legal Decisions

(*Continued from page 204*)

about 4 months, when he was discharged. Weins sued the corporation for full salary for 8 months due for the balance of the year.

The lower court held that the corporation must pay Weins $2,044.00 damages. The higher court approved the verdict. Trial was by jury and resulted in a verdict for plaintiff (Weins) for $2,044.00, which represented the amount of his claim less certain deductions for salary he had earned elsewhere during the period involved. If the record reveals no error in connection with the matters, the judgment of the trial court will be affirmed.

Not Governmental Agency

A few weeks ago a higher court laid down interesting law to the effect that a contractor who does work for a state cannot avoid payment of taxes on the plea that he is an agent of the state.

For illustration, in *Ralph Myers Contracting Corporation* v. *Tax Commissioner*, 158 N. E. (2d) 558, the testimony showed facts, as follows: The Ralph Myers Contracting Corporation had a contract with the Ohio Turnpike Commission to deliver to the commission approximately 8½ miles of completed roadway in accordance with plans and specifications. The contractor started the clearing operation, which included the preparation of the land and the removal of stumps and trees, for the projected right of way. The earthmoving equipment was then utilized to make the necessary excavations or fills after which the dirt was rolled, watered, and shaped in preparation for what is known as sub-base material. The sub-base material is then placed on the grade for paving operations.

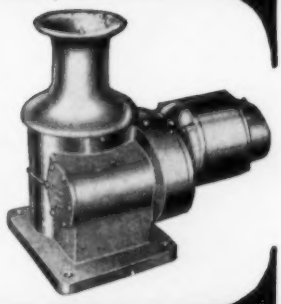
During these operations the contractor purchased many thousands of dollars worth of equipment for completing its contract.

The Tax Commissioner sued the contractor for $39,000.00 overdue sales and use taxes on this equipment. The contractor defended the suit on the grounds that it was not required to pay these taxes, first because the purchases come within the scope of a state law exempting sales of products used directly in

Webster CAR PULLERS

For Quick, Economical Spotting

One-man, push-button control. Always ready, always safe. The capstans on WEBSTER Car Pullers are designed to give long life to the ropes, and provide the necessary traction for pulling the load. The high-torque, hoist-type, weatherproof motor is an integral part of the unit. Two sizes of 5,000 or 10,000 lbs. rope pull at 40 ft. per min. WEBSTER Drum-Type Car Pullers also available in sizes from 7½ up to 50 hp. Write for literature.



Webster IDLERS

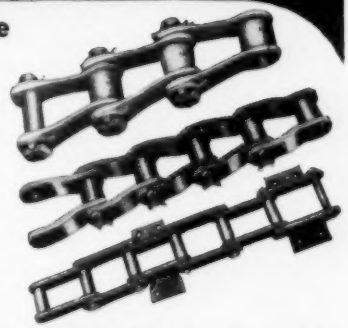
Job-Designed for Top Performance

Perfect and permanent roll alignment, economical operation, and minimum maintenance are built-in characteristics of WEBSTER Idlers. The balanced steel rolls have rounded edges which protect the belt and securely lock in the malleable iron roll ends. Timken tapered roller bearings are oversize to meet overloading and constant operation. Labyrinth seals of metal and felt keep grease in and dirt out. All parts interchangeable. WEBSTER Idlers will help you keep material handling costs down. Write for literature.

Webster CHAINS

Quality-Built for Long Service

For over eighty-four years WEBSTER has manufactured a complete line of standard and specialized cast and steel chains and chain attachment links for use in all industries. WEBSTER chain types include Pintle, Ley Bushed, Combination, Roller, Drag, Bevel and Roller Top Transfer. Our engineering department offers its experience and suggestions concerning designs and the adaptability of chains for meeting your needs. Write for catalog.



WEBSTER MANUFACTURING, INC.
DEPT. Q-10 TIFFIN, OHIO
Offices in All Principal Cities

Webster
SINCE 1876
BULK MATERIALS HANDLING EQUIPMENT

Enter 209 on card, page 241

Pit and Quarry

How to reduce mighty forests to a pulp!

After fourteen months of brutal punishment, Hewitt-Robins conveyor belt of Enka high-tenacity rayon proves its superiority!

At their Georgia installation, the Owens-Illinois Glass Company moves 325,000 tons of pulpwood a day. These logs travel 920 feet on Hewitt-Robins conveyor belting.

When the logs are loaded onto the belt by crane and side dump car, the impact is severe. That's why Owens-Illinois ordered Hewitt-Robins conveyor belting made of new high-tenacity Enka rayon. In the past fourteen months, this belt has moved a total of almost 100 million tons of logs! After this steady, punishing operation, the Hewitt-Robins conveyor belt shows no visible signs of damage.

It takes much more than the severe impact of jobs like this to damage a conveyor belt made of Enka high-tenacity rayon. Hewitt-Robins knows this. That's why, year after year, they continue to specify high-tenacity, low-cost Enka rayon. High-tenacity Enka rayon is made stronger to last longer.

Pound for pound, Enka rayon is your best value in industrial yarn :

Greater strength · More elasticity · Increased heat and humidity resistance · Higher safety factor · More economy · Superior flexibility Better shock absorbency · Longer service · Less maintenance.

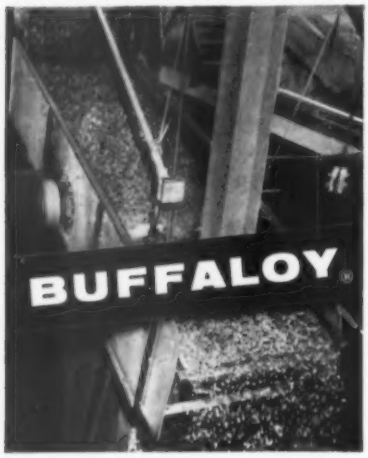
Specify Enka high-tenacity rayon yarns for industrial rubber products, chafer fabrics for truck and passenger tires, heavy-duty sewing thread for multi-wall bag closings and many other vital end-use applications.

Write for Hewitt-Robins brochure on C/R conveyor belting of high-tenacity rayon and cotton. It gives technical data on strength and other characteristics of belting made with cotton-rayon fabric. Write Hewitt-Robins, Stamford, Conn. Ask for bulletin 1-24A.

ENKA high-tenacity rayon for industry

® American Enka Corporation, 530 Fifth Avenue, New York 36, N. Y.
Leading producer of yarns and fibers for apparel, home and industry and Tyrex® viscose tire yarn.

LONGEST SERVICE AT
LOWEST COST PER TON



anti-abrasive wire cloth

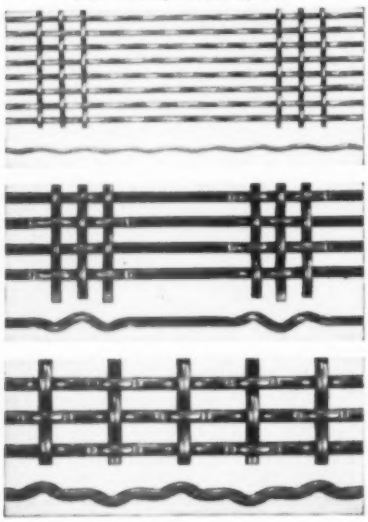
Here's the toughest mineral aggregate screen in the business . . . outperforming and outlasting screens that cost appreciably more. Specially processed for greatest resistance to wear, Buffaloy has both the hardness to hold up under severe abrasives and the flexibility to shrug off heavy shock loads.

Count on Buffaloy for many extra hours of service and substantial savings in your screening operations. Vastly superior to other high carbon wire screens, it is made in two grades:
Regular . . . for average conditions.
Super . . . . for highly abrasive materials.

Now available in an extra wide selection of weaves, mesh sizes and gauges — either as flat pieces or vibrator screen panels with special edges — Buffaloy can answer your every sizing need.

Get the complete story on Buffaloy and what it can do for you. Write for New Bulletin 600P.

BUFFALO WIRE WORKS COMPANY, INC.
526 Terrace, Buffalo 2, N. Y.



Enter 212 on card, page 241

manufacturing, processing or refining. Second, the contractor contended that when engaged in earth-moving work under a contract with the Turnpike Commission and with certain counties he was an agent or instrumentality of the state and counties involved.

The higher court refused to agree with these contentions and held that the contractor must pay the sales and use taxes to the state on all purchased equipment, saying:

"None of the items in the tax assessment had anything to do with the processing of material which was used in the construction of the road. Likewise, none of the items had any connection with the production of tangible personal property for sale by manufacturing or processing."

Truck Runs Over Contractor

Very often, in suits involving injuries, the testimony indicates that both the injured person and the one who caused the injury were negligent. The one whose sole negligence caused the injury is liable in damages to the other party. The jury will decide the degrees of negligence, and if both parties were negligent no damages are allowable.

For example, in *Hoffman* v. *Buggs*, 95 N. W. (2d) 237, the testimony showed that one Hoffman was building a garage. He engaged the Janesville Sand and Gravel Company to spread a ready-mix concrete pavement on the approach to the garage and on the garage floor over a layer of sand. The truck and mixer were driven by a driver named Buggs. Buggs backed the truck with the mixer containing the concrete material near to the place where the concrete was to be spread.

Buggs, with Hoffman assisting him, placed planks upon the sand over which the wheels of the truck could roll to back closer to the desired position. When Buggs placed the planks to his satisfaction and was ready to attend to the backing, he saw that Hoffman was standing on the ground to the right of the truck in a place of safety. Buggs then got into his truck, looked into his right rear-view mirror and saw on that side that the path to the rear of the truck was clear. Then, leaning out of the left side of his truck and looking to the rear, so as to guide the truck's wheels onto the planks, Buggs very slowly backed the truck until halted by warning shouts of Hoffman who had left the place where Buggs had seen him standing and had attempted to make a further adjustment of a plank in the rear of the truck. The truck knocked Hoffman down, causing serious injuries.

In subsequent litigation, the jury held that Buggs was causally negligent in failing to give a warning of his intention to back the truck but was not negligent in lookout. The jury also found that Hoffman was causally negligent in failing to exercise ordinary care for his own safety. The jury apportioned negligence of 25 percent to Buggs and 75 percent to Hoffman, whereby neither Janesville Sand and Gravel nor Buggs was held liable.

Driver Must Know

The higher courts have very consistently held that if the driver of a truck has no knowledge of its defects, his employer is not liable in damages for injuries to others resulting from such defects.

For illustration, in *Minder* v. *Goodhue Lime Service*, 93 N. W. (2d) 699, the testimony showed facts, as follows: A motor truck loaded with limestone collided with a passenger automobile at a highway intersection. An injured occupant of this passenger automobile sued the owner of the truck for damages, contending that the accident happened because of faulty truck brakes.

The higher court admitted that the truck owner, the Goodhue Lime Service, would be liable in damages to the injured passenger if the latter could prove that the brakes on the truck were defective. Since no mechanic or other competent person testified to this defectiveness, the higher court held that the passenger could recover no damages, saying:

"In action for injuries sustained in an automobile-truck collision at an intersection, the evidence presented a fact issue as to whether the driver of the truck knew or should have known that the brakes on the truck were defective."

This higher court explained that if the injured passenger had proved that the driver knew that the brakes were defective, the truck owner would have been liable in heavy damages to the injured passenger.

Manufacturers' News

The appointment of WALTER J. KRSTICH as sales engineer for the Denver Equipment Company, Denver, Colo., has been announced. Mr. Krstich will work in the western sales division, covering the 11 western states from headquarters in Denver.

W. J. Krstich

J. A. MacIntire Jr.

J. A. MACINTIRE JR. has been promoted to the position of general sales manager of the Republic Rubber Division, Lee Rubber and Tire Corporation, Youngstown, Ohio.

Mr. MacIntire joined Republic in 1953 as assistant manager of wire braid hose sales. In 1954 he was appointed Chicago district manager and in 1955 he returned to Youngstown as manager of wire braid hose sales, the position he has held until his present appointment.

GEORGE C. JENNINGS has been named wire rope sales manager of The Colorado Fuel and Iron Corporation. Mr. Jennings, who was formerly the company's New York district sales manager, joined CF&I in 1946. He will now be located at the company's Palmer, Mass., plant, succeeding A. S. RAIRDEN, who has been named works manager.

Daybrook Hydraulic Division, Young Spring & Wire Corporation, Bowling Green, Ohio, has appointed JOHN G. NOTHEIS as north central zone manager. Headquarters for the north central zone are at the factory in Bowling Green. Included in the zone are Illinois, Wisconsin, and Michigan.

Allis-Chalmers Manufacturing Company, Milwaukee, Wis., has assigned two men to new posts within its Boston district. S. M. OSTHAGEN, formerly manager of the Providence district territory, has been named manager of utility sales. C. R. CARLISLE, a representative in the Boston district, has been named manager of industrial sales in that district.

W. T. ALDERSON has been elected vice-president of the Ingersoll-Rand Company, New York, N. Y. Mr. Alderson was previously manager of the company's compressor engineering department. He joined Ingersoll-Rand in 1927, after service with General Electric Company as an industrial engineer.

Appointment of D. BRIAN WHEELER as director of sales engineering for the White Truck Division of The White Motor Company, Cleveland, Ohio, has been announced. Mr. Wheeler, who has been in charge of stress analysis and all mathematical work for White since 1951, replaces WILLIAM L. PETERSON, new manager of the White truck sales, parts, and service branch in Philadelphia.

Crown Zellerbach Corporation has begun the first West Coast production of Clupak paper at its Antioch, Calif., mill. The firm is running Clupak paper on its 260-in. wide No. 1 machine, which has an estimated production capacity of approximately 300 tons a day.

Crown Zellerbach is the eighth paper manufacturer to go on line with Clupak paper production since the beginning of 1959. The Clupak trademark and the patents covering its manufacture are owned by Clupak, Inc., New York, N. Y.

Wherever Ore Moves, SCOOT-CRETE

Ore Carriers Move It • FASTER • EASIER • AT LOWER COST

SCOOT-CRETE CD-4, shown being loaded in mine, will carry up to 15 tons payload. Model CD-3N has 5-ton payload. Note driver's side-mounted position for maximum vision and efficiency, forward and rear.

***Throughout the world,* SCOOT-CRETE gives top-rate performance. No rails needed, no ties, no cars, no independent power source. Diesel-powered for operation inside the mine, SCOOT-CRETE carriers are rugged for around-the-clock service; carry up to 15 tons at speeds to 15 mph, climb grades up to 18%. Available with standard or fully automatic transmission. SCOOT-CRETE has equal speeds forward and reverse for fast shuttle service. All CD models approved by U. S. Bureau of Mines for underground mining.**

Units available from 3,000 lb. to 15-ton capacity. Write for specifications and literature. See your Dealer.

GETMAN BROTHERS

SOUTH HAVEN, ZONE 6, MICHIGAN

Enter 213 on card, page 241

MAUREE COLLIERIES

At the Maumee Collieries in Indiana...

ANACONDA SHOVEL CABLE HAS A RECORD: 10 YEARS ON THE ROCK PILE!

Anaconda's SH-D Cable gives many years of dependable service in spite of heat, moisture, kinks, rocks and runovers!

How many shovel cable hazards can you count in this picture from the Maumee Collieries? Rocks . . . moisture . . . kinks . . . danger of runovers—they're all there. Yet the first installation of Anaconda's rugged SH-D Shovel Cable has resisted them all—*for 10 long years!*

It's proof again of the way Anaconda's in-the-field experience with Shovel Cable pays off in a superior cable for you. The important knowledge gained from use and testing of SH-D Cable *on the job* in our own mines goes into the design and manufacture of Anaconda Shovel Cable.

For example, the insulation is Anaconda Butyl (AB). Nothing can beat it for withstanding ozone, heat and moisture. Patented rubber cores cushion the ground wires and help prevent breaks from kinks and runovers. SH-D has a neoprene jacket that is exceptionally tough and abrasion-resistant. And every design, every component has been job-tested—your assurance of superior quality and performance.

Call on the Man from Anaconda with your cable problems. Or see your local Anaconda distributor. For new descriptive Bulletin DM-5818, "Anaconda Securityflex Portable Cables for the Mining Industry," write: Anaconda Wire & Cable Co., 25 Broadway, New York 4, New York.

59212

◀ For a decade, the Anaconda SH-D Shovel Cable you see here has been giving dependable service for the Maumee Collieries, Jasonville, Indiana. Its many superior design features enable it to resist on-the-job hazards that would knock out ordinary shovel cables.

ASK THE MAN FROM

ANACONDA®

FOR **SHOVEL CABLE**

Enter 214 on card, page 241

Continuous Tooth

HERRINGBONE GEAR SPEED REDUCER

SINGLE •
DOUBLE •
TRIPLE •
REDUCTION

The Gear with the Backbone •

Proven On-the-Job Advantages of This Type of Gear Reduction

1. No side thrusts, avoidable deflections, distortions, impact stresses.
2. Stronger teeth, due to archlike construction.
3. Greater load carrying capacity.
4. More silent and smoother gear action.
5. Uniform load across face due to balanced thrusts of opposing helices.
6. Better lubrication, due to wedge action of teeth.
7. Overall design makes it less costly to produce.
8. Can be substituted for straight tooth gears.

We have extensive facilities for making Herringbone Gears, producing them from 1" to 60" in diameter, 16 DP to 1½ DP and up to a 20" face.

YOUR GEAR INQUIRIES WILL RECEIVE PROMPT ATTENTION FROM US.

SEND FOR CATALOG 40

ESTABLISHED 1888

D. O. James

D. O. JAMES GEAR MANUFACTURING CO.
1140 W. Monroe Street, Chicago 7, Ill.

Enter 216-A on card, page 241

Conveyor Belt Service, Inc., Duluth, Minn., has organized a new operation in Cleveland, Ohio. The new company will be known as Conveyor Belt Service, Inc., of Ohio. The firm will provide eastern industrial operations with a repair and reconditioning service for conveyor belting.

WILLIAM A. MARS, president of CBS, Inc., is also president of the new Ohio operation. JAMES C. HEINTZ, Cleveland manufacturer, is vice-president. Mr. Heintz is president of Heintz Manufacturing Company, manufacturer of conveyor belt vulcanizing equipment. R. S. MARS JR. is secretary.

In announcing the formation of the new company, Mr. Mars also stated that the Central States Industrial Supply Company, Cleveland, Ohio, will serve CBS as exclusive sales representatives in the Cleveland area.

ROBERT GEIGER has been named by the Western Gear Corporation to serve as a sales engineer out of the company's Chicago office. Mr. Geiger will represent the firm's Industrial Products Division, selling its line of gearmotors, speed reducers, high speed units, and custom engineered machinery.

L. B. KRUMM has been appointed Detroit district manager for The Bristol Company, Waterbury, Conn. Mr. Krumm has been a sales engineer for Bristol's New York district since joining the company in 1953.

I. Dalstad

R. G. Humphrey

Two organizational changes have been announced for the Morris Machine Works, Baldwinsville, N. Y.

ROBERT G. HUMPHREY, former New York State district manager, has been elevated to the position of manager of marketing. Mr. Humphrey came to Morris Machine in March, 1958, from the Gates Rubber Company where he was a field engineer.

INGEMAR DALSTAD has been selected to succeed Mr. Humphrey. Mr. Dalstad was employed as product development engineer at Toledo Scale Corporation, Rochester, N. Y., before joining Morris Machine Works. Until his present promotion he served as application engineer.

KENNETH M. KOCH has been advanced to the position of director of engineering and GERARD J. FLANNERY has been promoted to service parts manager for the Transmission & Axle Division, Rockwell-Standard Corporation.

In his new position, Mr. Koch will direct all engineering activities at the division's six plants. Mr. Flannery will direct the activities of the Service Parts Department.

Easily the Best for Difficult Fine Mesh Screening

When it comes to the screening of difficult products such as lime, ag-lime and silica sand, no equipment matches the performance of the Leahy® No-Blind® screen with integrated Flex-Elex® jacket heating. Only the Leahy Screen completely eliminates bothersome flexible transformer connectors while providing other exclusive features that step up screening efficiency and cut screening costs. Send for Bulletin 16-EH.

Made by the Original Deister Company Established 1906

THE DEISTER CONCENTRATOR COMPANY, INC.
911 Glasgow Avenue, Fort Wayne, Indiana

Enter 216-B on card, page 241

Continental Leasing Corporation, Cleveland, Ohio, an affiliate of Corporate Plan Leasing, Ltd., of Toronto, Canada, has appointed CHARLES E. SIEGWARTH as executive vice-president and general manager. Mr. Siegwarth was formerly a vice-president and general manager of a nationwide leasing service and has had extensive experience in the equipment leasing field.

Present plans of the firm call for diversified leasing in heavy-duty trucks, construction, and other industrial equipment.

New distributor appointments have been announced for the Baldwin-Lima-Hamilton Corporation, Construction Equipment Division, Lima, Ohio.

Named to handle Lima Austin-Western crushing, screening, and washing equipment are J. C. Georg Construction Equipment, Inc., Schenectady, N. Y., Inland Diesel & Machinery Company, Spokane, Wash., and A. H. Cox & Company, Seattle, Wash.

J. C. Georg Construction Equipment, Inc., Syracuse, N. Y., will distribute Lima shovels, cranes, draglines, and pullshovels.

Barber-Greene Canada Ltd., Don Mills, Ont., announces the appointment of F. G. LEDEZ as manager of the Technical Service Division. He will be responsible for the administration and supervision of the machine service and repair parts programs. Mr. LeDez joined Barber-Greene in 1956 and has served as service engineer and eastern sales representative.

EDWARD C. BRASS has been named manager of the Cleveland, Ohio, office of The Okonite Company, Passaic, N. J. Mr. Brass succeeds FRED J. DAHLEIDEN, who has retired after 33 years of service.

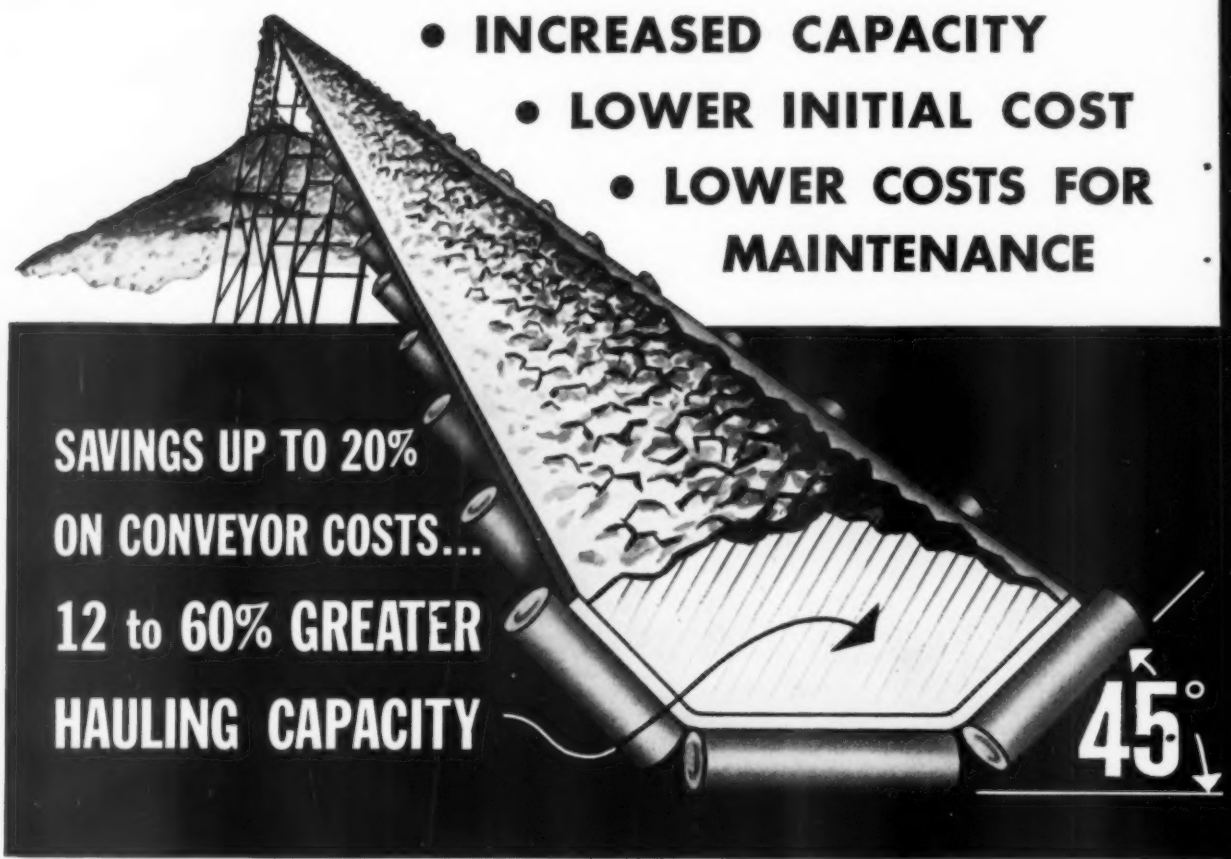
Also announced is the appointment of WALTER G. HUBER as manager of the Detroit, Mich., office, succeeding MILTON A. BERGDAHL, who retired on December 1 after 37 years in the company's marketing organization.

Enter 217 on card, page 241

MOST IMPORTANT NEWS

NOW YOU CAN USE 45° IDLERS

- INCREASED CAPACITY
- LOWER INITIAL COST
- LOWER COSTS FOR MAINTENANCE



It's a mathematical certainty that a belt can haul bigger loads with 45° idlers than with regular 20° idlers. But the 45° angle between concentrating idlers and bottom roll idlers is too sharp for an ordinary heavy duty conveyor belt. Plies separate, but modern RAY-MAN CONVEYOR BELT licks this problem . . . for all time!

Ray-Man's exclusive flexible construction and built-in stress compensation is guaranteed to take the sharp angle of 45° idlers without ply or cover separation at the hinge line. This opens a whole new era of conveyor design . . . permitting larger loads . . . narrower conveyors . . . assuring longer cover wear . . . lower handling costs!

RAY-MAN GIVES YOU "*MORE USE PER DOLLAR*" WITH 45° IDLERS

IN CONVEYING TODAY!

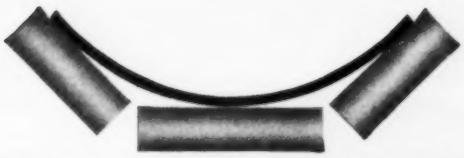
...TO HANDLE ALL MATERIALS

BIGGER LOADS, LESS SPILLAGE, LESS WEAR ON COVER WITH 45° IDLERS

20° IDLERS REQUIRE WIDER CONVEYOR TO HAUL SAME TONNAGE

Only RAY-MAN CONVEYOR BELT is BUILT to take the EXTRA STRESS OF 45° IDLERS

RAY-MAN IS GUARANTEED NOT TO PLY-SEPARATE AT 45° ANGLES



ORDINARY PLY BELTS ARE TOO BOARDY TO TAKE 45° ANGLES

Ask your R/M representative to show you how Ray-Man Conveyor Belt with 45° idlers can give you the most for your conveyor dollar . . . write for new Bulletin M303, "Ray-Man for 45° Idlers."

RAYBESTOS-MANHATTAN, INC.
MANHATTAN RUBBER DIVISION, PASSAIC, NEW JERSEY

RM

RM-961
ENGINEERED RUBBER PRODUCTS
. . . MORE USE PER DOLLAR

"THIS LUBRICANT PRACTICALLY ELIMINATED BEARING REPLACEMENTS"

Says- C. O. SPARKS, INC.
& Mundo Engineering Co. of Los Angeles, Calif.

"Prior to using LUBRIPLATE, we were replacing shaker screen bearings within 60 to 120 days due to lack of or faulty lubrication. Since we started using LUBRIPLATE seven years ago, we have only replaced two shaker screen bearings and these because of natural wear. We now use LUBRIPLATE for general lubrication throughout our plant."

W. T. Ellington, President
Mundo Engineering Co.

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose . . . LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

Enter 220 on card, page 241

ROBERT C. MEISSNER has been named president of Meissner Engineers, Inc., Chicago, Ill. Mr. Meissner was formerly executive vice-president of the firm and administrative officer for all projects in consulting and design.

As president of the firm, Mr. Meissner will assume full administrative responsibility for the two Meissner engineering divisions: industrial process plant design and bulk materials handling, and civil engineering.

R. C. Meissner

R. M. Giroux

ROBERT M. GIROUX has been named midwestern regional manager by the Owosso Division, Midland-Ross Corporation. Mr. Giroux's territory will include the states of Illinois, Wisconsin, Minnesota, Iowa, Nebraska, and North and South Dakota.

CHARLES J. JACOBUS, chief engineer, and HERBERT L. ORWIG, development engineer, of the Trojan Division of The Yale & Towne Manufacturing Company, have been awarded a $1,000 prize in the third annual Machine Design Award Program sponsored by the James F. Lincoln Arc Welding Foundation. The engineers won a fifth place award for the design of the main frame and lift arms of the Model 304 Trojan tractor shovel, introduced in January, 1959.

ROBERT A. BARR has been elected a vice-president of The Babcock & Wilcox Company and has assumed charge of the Refractories Division. Mr. Barr replaces JAMES E. BRINCKERHOFF, vice-president in charge of the Refractories Division, who retired December 31 after 40 years of service.

General Electric's Communication Products Department, Lynchburg, Va., and the E. F. Johnson Company, Waseco, Minn., have announced a joint national marketing effort in the Class D citizens radio field. In addition to G-E's standard communication lines, the General Electric two-way radio sales offices will now sell Johnson's new Viking Messenger equipment. The units will be installed and serviced by G-E's service stations. Existing Johnson distributors will also market the Messenger equipment.

JOHN L. MACDONALD, formerly Philadelphia district sales manager, has been named manager of the newly-created sales training department of the Thor Power Tool Company, Aurora, Ill. Mr. MacDonald has been in the company's sales department since 1947, when he joined Thor as a service engineer at Boston.

JAMES Q. GOLDEN, Atlanta, Ga., district sales manager, has been named as Mr. MacDonald's successor. Other changes announced as a result of these moves are: RICHARD E. JAMES, district manager in Indianapolis, Ind., replaces Mr. Golden at Atlanta; SAMUEL P. GARTLAND transfers from his position as Boston district manager to succeed Mr. James at Indianapolis; and ROBERT J. GREY, service engineer at Boston, becomes district sales manager there, succeeding Mr. Gartland.

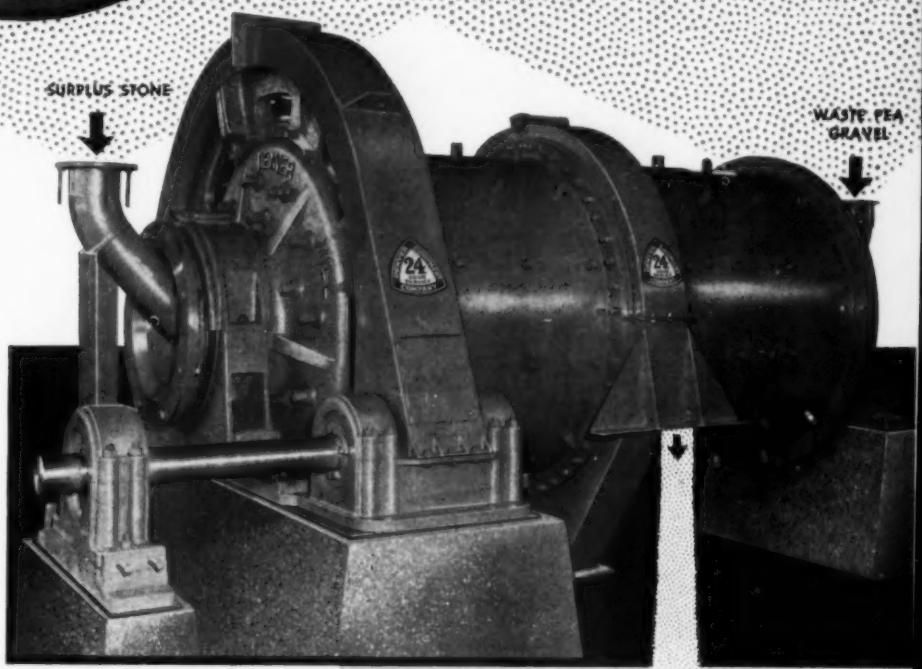
H. M. PATTON, works manager, and K. F. POTTER, director of engineering of the American Hoist & Derrick Company, St. Paul, Minn., have been elected vice-presidents of the company.

Appointment of T. F. O'CONNELL as general sales manager, Distributor Products Department of the Linde Company, Division of Union Carbide Corporation, has been announced.

Mr. O'Connell joined Linde in 1928 as a sales representative. Prior to his previous assignment as Pacific Coast manager in 1957, he was successively district manager at St. Louis, Indianapolis, and Detroit.

Enter 221 on card, page 241 →

DENVER Peripheral Discharge MILLS



turn waste stone and pea gravel into valuable specification sand...

—specification sand for concrete, mortar or asphalt—simple, quick, easy and profitable. You get a graded product that's sharp and clean—easy to blend with coarse sizes or sell, and worth many dollars of extra profits to you!

the first step is

DENVER SAND Grinding Test Service

—No Cost to You

Our testing laboratory is backed by more than 30 years of practical test and field experience. Actual sand grinding demonstrations will show you

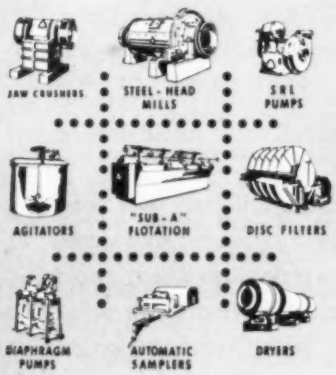
- **—type and size grinding mill needed to produce desired tonnage.**
- **—proper size auxiliary equipment, such as classifier, pumps, etc.**

Tests eliminate risk of your specifying equipment too small to do the job or too large and costly for your needs. Preliminary tests are made without charge. Send ¼ yard sample of material prepaid to—

DENVER TESTING LABORATORY
1755 Blake Street—Denver, Colorado

Center Peripheral Discharge Denver Mill is shown above. Also End Peripheral, Grate Discharge and the Trunnion Overflow Mills available. Mill sizes (up to 10' dia. x 20' long) and types best suited for your grinding needs are described in Bulletin No. B2-B20.

$HARP, CLEAN
$PECIFICATION $AND



"The firm that makes its friends happier, healthier and wealthier"

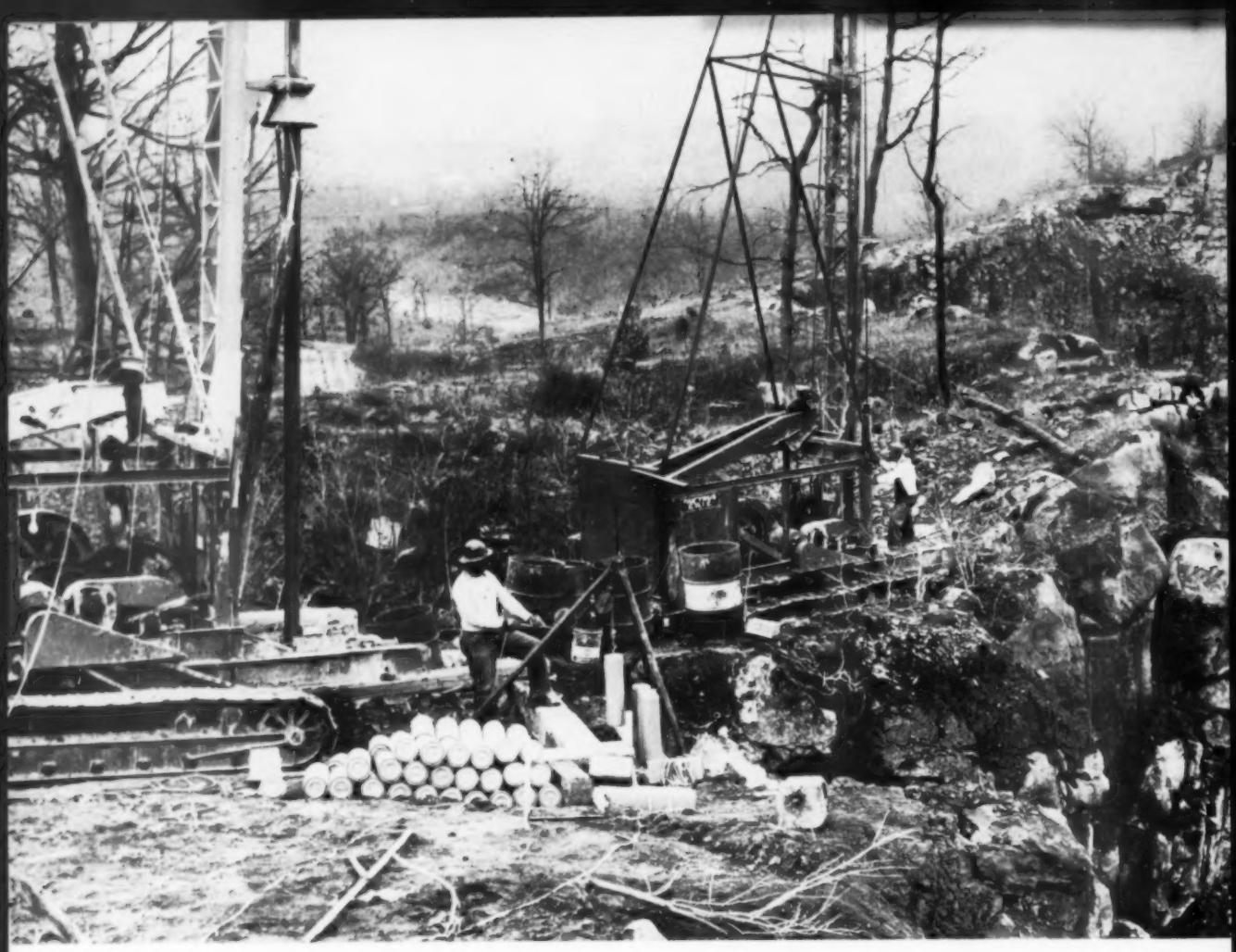
DECO ENGINEERS — STANDARD RELIABLE 24 HOUR SERVICE EFFICIENT

DENVER EQUIPMENT COMPANY

Cable DECO DENVER — Phone CHerry 4-4466

1400 Seventeenth St. — Denver 17, Colorado

- **NEW YORK CITY** 4114 Empire State Bldg. Phone CH 4-6510
- **BLUEFIELD, W. VA.** P.O. Box 1119 • Phone DAvenport 5-6598
- **TUCSON, ARIZ.** 3437 E. Camden St. • Phone EAst 6-7282
- **LONDON** 15-17 Christopher St., Finsbury Sq. Phone Bishopsgate 3575
- **JOHANNESBURG** Broadway and Ninth Bez Valley • Phone 25-7531
- **TORONTO** 185 Bay Street Phone EMpire 3-8836
- **VANCOUVER** 802 Credit Foncier Bldg. Phone MUtual 3-7595
- **MEXICO CITY** Avenida Juarez 14, Desp. 615 Phone 21-1477
- **LIMA** Marquinarias 270 Casilla 4950 • Phone 41887



November 17, 1958. Driller (center foreground) loading first hole of a blast at Acme Limestone Company's quarry in Fort Spring, W. Va.

"Preloading with Du Pont Nitramex® helped us cut costs while our wage scale was going up," reports Acme Limestone Company

"We have had a 45% increase in our wage scale, yet we have been able to reduce our unit costs per ton for loading and shooting," says Mr. A. W. McThenia, president and general manager of Acme Limestone Company.

This is brought about by the drillers loading each hole with non-cap-sensitive "Nitramex" 2H as soon as it is drilled. Holes cannot plug with loose stones or heavy clay from their quarry's cavernous seams. Result: Acme gets full value for all drilling time.

They never have to bring a drill back over holes to open them up. Holes may be loaded six months or longer before firing—a procedure which would be practically impossible with dynamite or prills.

Better fragmentation • "With 'Nitramex' we get

May 21, 1959. Acme Limestone Company quarry face 40 holes and 6 months later.

May 21, 1959. After the shot—288,000 tons of well broken limestone.

maximum density, with the result that our fragmentation is far beyond our former expectations," Mr. McThenia continues. "We have increased our tons per hour through our primary crusher, which in turn materially reduces our costs per ton all down the line."

The Acme people speak with authority. They have been using Du Pont Nitramon® and Nitramex® for the last ten years and have had four years' experience with the preloading method.

It's safer • Du Pont "Nitramex" 2H is inherently safer than conventional dynamites. It is not cap sensitive and cannot be detonated prematurely by the most severe abuse that would normally be met in quarry operations.

Resists water, handles easily • "Nitramex" 2H is hermetically sealed in metal containers, so it has infinite water resistance. And you get no headache from handling.

Your Du Pont representative can tell you more about this blasting agent and the dollar-saving, time-saving, preloading method. Contact him or write to E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, 6444 Nemours Building, Wilmington 98, Delaware.

Chief Engineer, Bill Ruby, supervises loading.

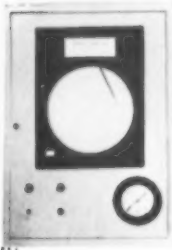
DU PONT BLASTING AGENTS

DU PONT REG. U.S. PAT. OFF. *Products of Du Pont Research*

Better Things for Better Living . . . *through Chemistry*

Enter 222 on card, page 241

CONVEY WEIGH and CONTROL



your product with one integrated operation

Mechanize with

CON-O-WEIGH

The CON-O-WEIGH system can be installed as a simple weigh-belt mechanism or it can function as a process control system for conveyor-carried bulk materials. Equipped with variable-speed drive and an automatic speed compensation feature, CON-O-WEIGH is ideally adapted to complex feeding, blending and proportioning operations.

Its basic parts are simple . . . weigh section, load cell and control cabinet. Its application broad . . . records accurate running totals on loads of one to 5000 tons per hour.

The weigh bridge space requirements are small . . . can be adapted to existing or new installations.

Write for complete details.

Industrial Physics & Electronics Company

470 So. 13th East - Salt Lake City 2, Utah
Phone DAvis 8-8678

Enter 224 on card, page 241

Merger of the Carrier Conveyor Corporation and its subsidiary, General Industries, both of Louisville, Ky., into the Chain Belt Company, Milwaukee, Wis., has been announced. The merger was completed through an exchange of Chain Belt stock for all assets of Carrier and General Industries.

At present, Carrier Conveyor is functioning as an engineering and sales company, and General Industries is engaged in manufacturing. Under present merger plans, the corporation would become the Carrier Conveyor division of Chain Belt, with no changes contemplated in either Carrier's business, sales, or manufacturing operations.

A. P. Green Fire Brick Company, Mexico, Mo., has acquired the Dixie Fire Brick Company, located near Birmingham, Ala. This latest acquisition, in addition to a basic refractories plant nearing completion at Tarentum, Pa., brings the total number of A. P. Green plants to 15.

HARRY E. SMITH, retired vice-president in charge of rubber product sales for Raybestos-Manhattan, Inc., Passaic, N. J., died November 2 at the age of 70 in Sarasota, Fla.

Concurrent with the appointment of two new regional sales managers in its Construction Equipment Division, the International Harvester Company has expanded its domestic equipment sales operations from four to six regions and reassigned four regional sales managers into new operating territories.

J. D. GLADDEN and P. D. EVANS, formerly assistant regional managers of the plains and eastern regions, were named regional managers of the southwest and northwest regions, respectively. H. E. BROADWELL, formerly plains states regional manager, has been assigned to the company's northeast region.

E. L. BROUGHTON, formerly head of the eastern region, will direct sales activities in the southeast region. R. A. ELLIOTT and JACK BESS continue as regional sales managers of the company's central and western regions, respectively.

D. F. Jurgensen

W. F. Simmons

D. F. JURGENSEN has been named vice-president—general manager of the Construction Equipment Division of the Blaw-Knox Company, Pittsburgh, Pa. At the same time, WENDELL F. SIMMONS was appointed division general sales manager.

Mr. Jurgensen has been employed in an executive capacity for the last three years at the firm's Pittsburgh headquarters. Mr. Simmons, a veteran marketing specialist and eastern regional representative for the company, succeeds Austin K. Thomas, who resigned as general sales manager.

The addition of three new sales engineers has been announced by the Electrical Products Division of the Joy Manufacturing Company, St. Louis, Mo. Serving the Chicago territory is RAYMOND KRONER.

ROBERT FAVEZ has been assigned to the St. Louis territory. Previous employment has included the National Electric Service Co., as sales engineer. THOMAS HANSEN, working out of Joy's Compton, California, office, serves the Los Angeles and southern California territory.

The Gleasner Corporation, Buffalo, N. Y., has been appointed distributor in western New York and northern Pennsylvania for the complete lin eof Ka-Mo earth boring and drilling equipment manufactured by the Kwik-Mix Company, Port Washington, Wis.

H. B. BRUNHOFFER has been appointed office manager of the Phoenix office of the Industrial Sales Division of the Western Machinery Company, San Francisco, Calif.

H. W. HARRAH, sales engineer in the domestic sales division since 1945, has been transferred to the International Sales Division at the Denver Equipment Company, Denver, Colo. He will be responsible for the firm's sales activities in Canada, Australia, Japan, Burma, and the Philippines.

WILLIAM M. PHILLIPS has been promoted to the post of manager of the southern district for The Eimco Corporation, Salt Lake City, Utah. He will be in charge of sales of the Birmingham, Ala., and Houston, Tex., offices.

Mr. Phillips joined Eimco as a sales engineer in Birmingham. In 1957 he was appointed assistant manager of the southern district, the position he held prior to assuming his new post. He will continue to headquarter in Birmingham.

W. M. Phillips

C. M. Basile

C. M. BASILE has been elected president of the Link-Belt Speeder Corporation, Chicago, Ill., to succeed D. W. LEHTI, who has retired after 25 years with the company.

Mr. Basile joined the Link-Belt Company, the parent firm, in 1928. and was employed in various phases of manufacturing. Since coming to Link-Belt Speeder in 1950, he has been a director and vice-president in charge of operations. Earlier this year he was elected vice-president of the Cedar Rapids plant and president of Link-Belt Speeder (Canada) in Woodstock, Ont.

Mr. Lehti joined Speeder Machinery Corporation as a district sales representative in 1934 and became assistant plant manager in 1939, when the company was acquired by Link-Belt and the name was changed to Link-Belt Speeder Corporation. He became vice-president in 1947.

In a realignment of its sales organization for building products, the Flintkote Company, New York, N. Y., established a new Market Research Department and named GERALD GILLIGAN to head it. HOWARD GRAHAM, formerly general assistant in Flintkote's New York office, was named as Mr. Gilligan's assistant.

TOM MCDONALD has been named to serve as assistant to the vice-president for sales. He will co-ordinate the activities of the newly-designated merchandising managers, who are Dr. G. W. Berry, built-up roofing and liquid products; C. S. Bundy, roofing products; A. S. McCarthy Jr., siding products; R. J. Mulligan, wool products and prefabricated homes; O. H. Storey Jr., gypsum products; and E. Wheeler, insulation board products.

The new regional managment setup, which supplants the previous divisional arrangement, includes: H. H. Whittemore, northeastern regional manager, Rutherford, N. J.; A. P. Noble, southeastern regional manager, Atlanta, Ga.; G. G. Davenport, southwestern regional manager, New Orleans, La.; and C. G. Worley, midwestern regional manager, Chicago Heights, Ill.

JOHN H. BRINKER has been elected executive vice-president and a director of the J. I. Case Company, Racine, Wis. Mr. Brinker resigned as vice-president and general manager of the Permaglas Division, A. O. Smith Corporation to accept this position.

SKF Industries, Inc., Philadelphia, Pa., has purchased a 12-acre tract of land in Hawthorne, Calif., in anticipation of expansion requirements of its West Coast facilities, which include the Reed Instrument Bearing Company and a warehouse, both in Los Angeles.

BENJAMIN L. GRIDLEY has joined the Republic Rubber Division, Lee Rubber & Tire Corporation, Youngstown, Ohio, as a field representative. He will headquarter at Republic's eastern district office in Philadelphia, Pa., and serve that area.

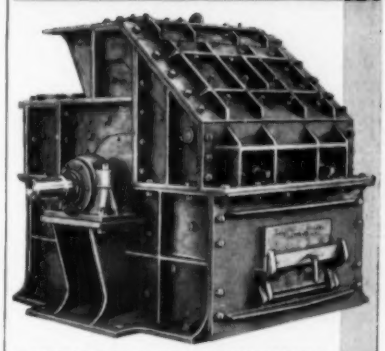
American HAMMERMILLS

offer

HIGH CAPACITY REDUCTION

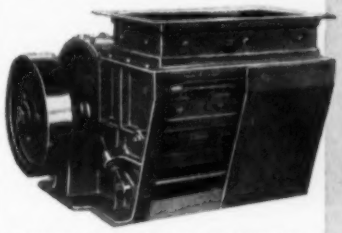
at

LOW OPERATING COST



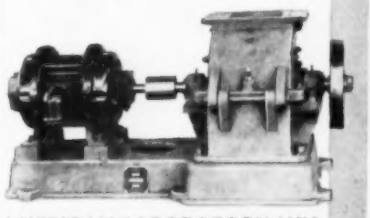
AMERICAN ACS HAMMERMILL

Capacities to 250 tons per hour



AMERICAN "30" HAMMERMILL

Capacities to 100 tons per hour



AMERICAN LABORATORY MILL

Capacities to 2000 lbs. per hour

WHAT IS YOUR CRUSHING PROBLEM?

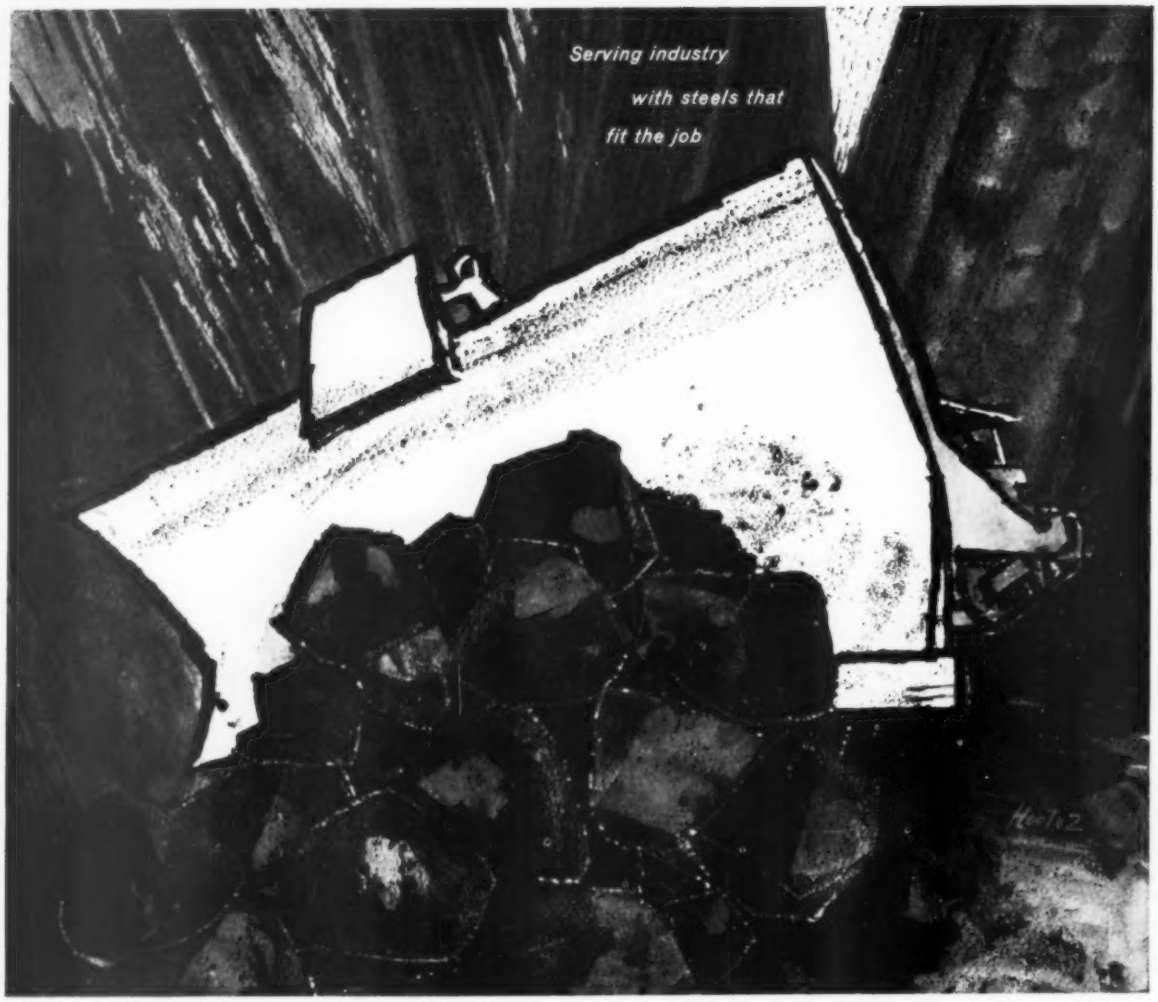
The American Engineering Department will be happy to analyze your reduction problems, make test runs if necessary, and offer specific recommendations. No obligation.

WRITE for complete literature on American Hammermills.

American PULVERIZER COMPANY

1059 Macklind Ave., St. Louis 10, Mo.

Enter 225 on card, page 241



GET TOUGH

WITH LUKENS "T-1" STEEL
TRADEMARK

Where the going gets rough, versatile Lukens "T-1" steel fights back. For repair or modification of heavy duty equipment such as truck beds, chutes, bucket teeth and dozer blades, this special duty steel plate can be ordered from *warehouse stock* in a wide range of plate sizes and gages. Lukens "T-1" is the modern mining steel – you can work and weld it in the field as readily as in your shop. Its terrific resistance to abrasive impact – coupled with an extremely high yield strength – means fewer replacements and often greater payloads. That's why more and more equipment builders are using Lukens "T-1" to provide longer life in shovel buckets, trucks and other mining equipment. Remember to specify the extra-tough 321 min. BHN quality. For performance and application details, request our special booklet, "Lukens 'T-1' for Toughness." Address Manager, Application Engineering Dept., 010 Services Bldg., Lukens Steel Company, Coatesville, Pennsylvania.

You can order Lukens "T-1" steel plate from these Steel Service Centers:

These warehouses can supply you with Lukens "T-1" steel plate...

Alabama, BIRMINGHAM 2, O'Neal Steel, Inc., P.O. Box 2623 • **California,** LOS ANGELES 54, Earle M. Jorgensen Co., P.O. Box 2358, Terminal Annex, 10650 S. Alameda St. • LOS ANGELES 33, The R. J. M. Company, 238-248 South Mission Rd. • **Illinois,** CHICAGO 8, Joseph T. Ryerson & Son, Inc., 16th and Rockwell Sts. • **Kentucky,** ASHLAND, Mansbach Steel Co., 19th St. and River Front • **Maryland,** BALTIMORE 2, Wm. G. Wetherall, Inc. 317 President St. • **New Mexico,** ALBUQUERQUE, Miller and Smith Mfg. Co., Inc., 500 Phoenix Ave., N. W. • **Ohio,** CLEVELAND 6, Mills-Wolf Steel Co., 12434 Cedar Rd. • **Oregon,** PORTLAND 4, J. E. Haseltine & Co., 115 S. W. Second Ave. • **Pennsylvania,** McKEES ROCKS, Follansbee Steel Co., 200 Bradley St. • **Quebec,** MONTREAL, Drummond, McCall & Co., Ltd. 930 Wellington St. • **Utah,** SALT LAKE CITY, Structural Steel & Forge Co., P. O. Box 300 • **Washington,** SEATTLE 4, Stack Steel & Supply Co., 500 Landers St. • SPOKANE 10, Union Iron Works, East 217 Montgomery Ave., P. O. Box 2135.

LUKENS ®

HENDRIX

Dragline Buckets

LIGHTER BUCKET WEIGHT . . . providing greater capacity without sacrifice of strength or durability.

ALL-WELDED CONSTRUCTION . . . including arch of box-section design and one-piece hitch plate and hoist trunnion casting for structural strength and distribution of drag pull.

14% MANGANESE STEEL . . . chains, all other fittings, reversible tooth points and armor.

PERFECT PERFORMANCE . . . faster loading . . easier handling . . cleaner, smoother dumping.

"A Type for Every Digging Purpose"
¼ to 40 Cubic Yards
Perforated or Solid

HENDRIX MANUFACTURING COMPANY, Inc.
MANSFIELD, LOUISIANA

The promotion of JOHN MELCHI from service representative to midwest district representative for the Koehring Division of the Koehring Company, Milwaukee, Wis., has been announced.

The territory assigned to Mr. Melchi includes Colorado, Iowa, Kansas, Minnesota, Nebraska, North Dakota, South Dakota, and parts of Missouri and Wyoming.

J. Melchi

W. L. Dowdey

Two top management appointments have been announced for The Eimco Corporation, Salt Lake City, Utah.

WAYNE L. DOWDEY, formerly manager of Eimco's southern district, has been appointed general sales manager for the firm. PAUL O. RICHTER, vice-president, has been named general manager of the Filter Division.

In his new post as general sales manager, Mr. Dowdey will be responsible for all domestic sales in the corporation's various divisions. Mr. Dowdey joined Eimco in 1945.

Mr. Richter has been associated with Eimco's sales organization for 24 years.

The promotion of DWIGHT E. LEWIS to general superintendent of Chain Belt Company's heavy machinery factory operations in Milwaukee, Wis., has been announced. In his new post, Mr. Lewis will be responsible for factory production in four plants within the company's construction machinery, conveyor, and process equipment divisions.

Mr. Lewis has been with Chain Belt since 1947. Prior to this promotion he served as a special assistant to the factory manager of the heavy machinery division.

RALPH HECKMAN, advertising director of the Gates Rubber Company, Denver, Colo., for the last 26 years, has been named vice-president in charge of advertising research and planning. The post was especially created for Mr. Heckman, a Gates vice-president since 1934.

Replacing Mr. Heckman as administrative director of the advertising department is ROBERT E. HOLWELL, who has served in sales engineering, and research during the ten years he has been with Gates.

The transfer of Mr. Holwell from sales to advertising coincides with three shifts of key personnel in the marketing division.

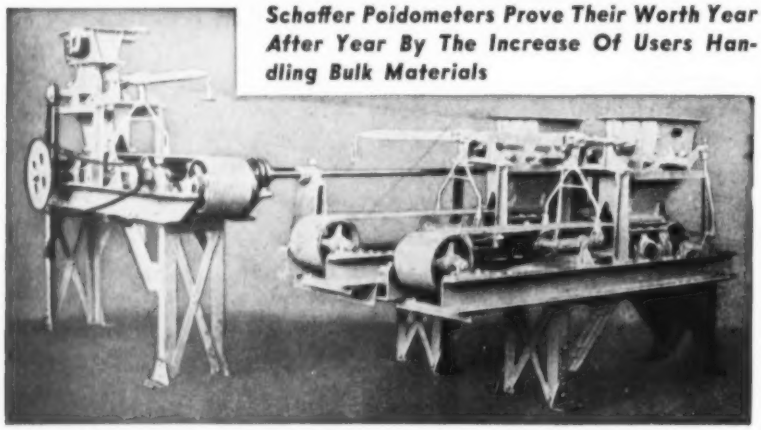
CHARLES J. KORSOSKI, vice-president, becomes head of the "private brands" sales division.

DREXEL D. MINSHALL becomes head of the automotive jobber and hardware sales division.

B. C. EMERSON, who has been employed in the industrial marketing department of Gates, becomes sales manager of Gates "private brand" tire sales department.

PROVEN! ACCURATE, EFFICIENT PERFORMANCE TO BULK MATERIAL HANDLERS

Schaffer Poidometers Prove Their Worth Year After Year By The Increase Of Users Handling Bulk Materials



Battery of Poidometers in Process Industry

NOW! OVER 1600 SERVING INDUSTRY

Write for FREE Catalog No. 5

Schaffer Poidometers eliminate the guesswork in your plant.

These Poidometers Weigh, Blend, Record, Feed, Mix or Proportion at top level accuracy, efficiency and speed.

Let us help you with your bulk materials problem.

SCHAFFER POIDOMETERS CO. 2828 SMALLMAN STREET PITTSBURGH 22, PA.

Enter 228 on card, page 241

NORMAN L. MCARTHUR has been appointed southwestern zone manager for Daybrook Hydraulic Division, Young Spring & Wire Corporation, Bowling Green, Ohio. Zone headquarters are in Tulsa, Okla.

Formerly Mr. McArthur was a field salesman for Midwestern Engine & Equipment Company, and district representative for Ottawa Steel Division, Young Spring & Wire.

Harbison-Walker Refractories Company, Pittsbugh, Pa., has named H. A. BEDNARSKI assistant manager, basic sales, hearth materials, and K. E. HANSEN assistant manager, basic sales.

ROBERT G. BURNSIDE has joined Republic Rubber Division, Lee Rubber and Tire Corporation, Youngstown, Ohio, as a field representative. Headquartered in Troy, N. Y., Mr. Burnside will be responsible for the sales and service of Republic's line of hose, belting, packing, and molded rubber products in parts of New England and New York.

AT LAST

WE'VE SUCCEEDED IN PRE-HARDENING OUR ROL-MAN MANGANESE STEEL WEAR PARTS!

AFTER 37 years of working with Rol-Man (11 to 14%) manganese steel, we've developed a new treatment for this famous work-hardening steel. This is new *pre-hardened* standard Rol-Man steel.*

What's the difference between this new variety and standard Rol-Man steel?

The big thing is that *pre-hardened* Rol-Man steel is harder to begin with. And this is not a one-coat case hardening; it is not created by hammering. New *pre-hardened* Rol-Man steel is *hard all the way through.*

And it still retains Rol-Man steel's unbeatable work-hardening ability.

But because new *pre-hardened* Rol-Man steel is not as soft and ductile as the original Rol-Man steel, it does not share the original's almost complete "unbreakability". However, this new Rol-Man steel is still plenty tough.

Another thing about *pre-hardened* Rol-Man steel is that it stands up better against the eroding, abrasive effect of small, fine, hard, gritty, light materials. It gives you more wear per dollar even on jobs where it handles materials that are so fine and light there is no impact-hardening.

You begin to get the idea? New *pre-hardened* Rol-Man steel can take on the light, abrasive jobs just as successfully as the standard Rol-Man handles the roughest, toughest jobs. This new variety of Rol-Man steel has its own advantages . . . its own particular applications.

So now you have two differently treated forms of Rol-Man steel to select from for every wear part you use. Both with the original 11 to 14% Hadfield formula . . . both hardening as you use them. And if you use both . . . for the jobs each is right for . . . you'll get more wear for the dollar. And, most important, you'll keep your down-time to a minimum.

Interested? Please accept our invitation to visit the Manganese Steel Forge Company booth at both the National Sand and Gravel Association, and the National Crushed Stone shows. It will pay you to get acquainted with Rol-Man manganese steel wear parts . . . both the standard and the new *pre-hardened.*

*Pat. Pending

MANGANESE STEEL FORGE CO.

Richmond Street and Castor Avenue, Philadelphia 34, Pa.

ROL-MAN®
The Wear Resistant Steel

H. C. Godden

H. C. GODDEN has been named manager of the Jacksonville, Fla., branch of the White Truck Division of The White Motor Company, Cleveland, Ohio. Mr. Godden has 36 years' experience with White, with more than 20 years spent as a sales, district, or territory manager and in managing branch operations. In recent months he has been a White Truck Division territory manager in Florida and nearby states.

PAUL D. WILLIAMS has been named manager of marketing administration for the General Electric Communication Products Department's national headquarters at Lynchburg, Va. Mr. Williams was formerly manager of marketing for the company's Insulating Materials Department at Schenectady, N. Y.

Directors of Dorr-Oliver Incorporated, Stamford, Conn., have elected J. D. HITCH JR., president, to the board chairmanship, and named L. R. BOLLING, executive vice-president, to succeed Mr. Hitch as president. Mr. Bolling will continue as chief executive officer.

Mr. Hitch joined the former Dorr organization in 1927. After serving as the company's representative in Japan, he was appointed export manager in 1935. He was successively elected vice-president for sales and a director, executive vice-president, and president in 1953. With the merger of Dorr and Oliver organization in 1954, he became president and a director of Dorr-Oliver.

Mr. Bolling joined the company in 1941, serving successively as assistant controller, controller, secretary, and treasurer of the former Oliver United Filters organization. When it merged with The Dorr Company in 1954, he became a vice-president and a director. In June of 1959 he was elected executive vice-president and chief executive officer.

ROBERT KNIGHT has been named district manager in western Missouri, Kansas, and eastern Nebraska for the Multiwall Division, Hudson Pulp & Paper Corporation, New York, N. Y. He will headquarter in Kansas City.

R. Knight

J. R. Perry

As part of a general revision and enlargement of its representation in the south and southwest, the Fuller Company, Catasauqua, Pa., has opened a district office in Houston, Tex.

The new office will be managed by JOSEPH R. PERRY, who for the last eight years has been sales and service engineer for Fuller in the territory consisting of southern California, Arizona, New Mexico, and west Texas.

As part of his new duties, Mr. Perry will render technical assistance to Power Machinery Co., a Fuller representative with headquarters in Tulsa and branch offices in Dallas, Houston, and Kansas City.

The appointment of STEPHEN M. WILSON JR. to the new post of field sales manager for Atlas Powder Company's explosives sales department was one of several changes in the explosives division's organization. Other changes included the appointment of J. W. COCHRAN as manager of the sales department's Chicago district, succeeding JOHN F. FLIPPO who succeeds M. Wilson as manager of the eastern district in Wilmington, Del.

Also included were the following appointments: JACK E. DOWNEN as manager of construction, eastern area, with headquarters in Wilmington; and PAUL PATTEN as manager of construction, southern area, with headquarters in Nashville, Tenn.-both new posts.

TRIAL SAMPLES

Of World-Famous WHITMORE'S Lubricants NOW IN AEROSOL SPRAY-ON CANS!

HANDI-LUBE LIQUID GEAR COMPOSITION

For open gears, sliding surfaces—exclusive formulas eliminate metal to metal contact, keep wear on the lubricant not the metal—no breakdown even after prolonged use under water—available for every climatic condition—packaged in handy 16-oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

WIRE ROPE SPRAY LUBRICANT

Exclusive formulas for lubricating and protecting wire rope, chain, springs. Penetrates to the core of wire rope minimizing internal friction and increasing usable life up to 300%—special protective qualities absolutely eliminate corrosion—non-gumming qualities reduce "carry-back"—packaged in handy 16 oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

65 YEARS OF LEADERSHIP LUBRICATING THE FOLLOWING:

- Open Gears, Dipper Sticks, Cams
- Enclosed Gear Cases
- Wire Rope and Cable
- Hydraulic Units, Torque Converters
- Roller, Ball, and Sleeve Bearings
- Speed Reducers

Est. 1893

THE WHITMORE MANUFACTURING CO.

LUBRICATING ENGINEERS

CLEVELAND 4, OHIO, U.S.A. PHONE: VULCAN 3-7272

Enter 230 on card, page 241

product:

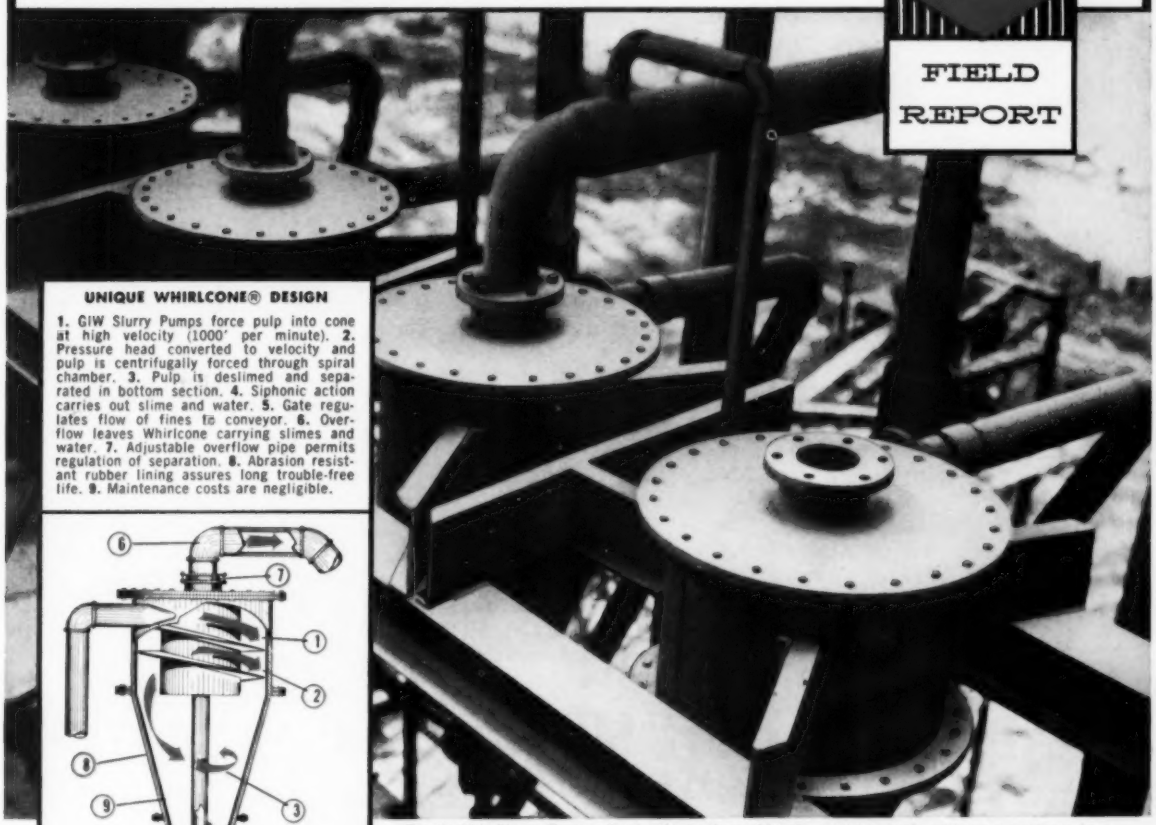
COTTRELL WHIRLCONE® SEPARATORS

customer:

BECKER COUNTY SAND & GRAVEL CO.

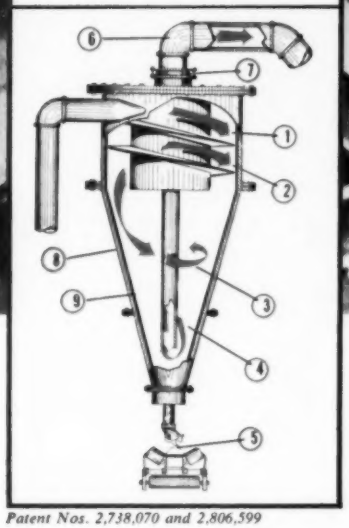
GIW

FIELD REPORT



UNIQUE WHIRLCONE® DESIGN

1. GIW Slurry Pumps force pulp into cone at high velocity (1000′ per minute). **2.** Pressure head converted to velocity and pulp is centrifugally forced through spiral chamber. **3.** Pulp is deslimed and separated in bottom section. **4.** Siphonic action carries out slime and water. **5.** Gate regulates flow of fines to conveyor. **6.** Overflow leaves Whirlcone carrying slimes and water. **7.** Adjustable overflow pipe permits regulation of separation. **8.** Abrasion resistant rubber lining assures long trouble-free life. **9.** Maintenance costs are negligible.



Patent Nos. 2,738,070 and 2,806,599

Tough GIW Slurry Pumps feed pulp to these 25" dia. Whirlcones®, which retain fines from classifier overflow. Maximum recovery rate is 20 tons per hour per cyclone. The cones will handle material from −12 mesh to lightest slime.

Whirlcone® Separators solve difficult fine recovery problems.

The retention of fines in the −50 plus 200 mesh range posed a disturbing problem for the Becker County Sand & Gravel Co., of Cheraw, S.C., primarily because the large amount of water used in processing the sand and gravel washed out the desirable fines with the minus 200 slimes.

Fourteen 25" dia. Whirlcone® wet type cyclones installed parallel in four Becker plants solved this problem completely. Operating an average of 8 hours daily, they extract up to 100 tons of clean, fine sand per hour from wash water while the minus 200 mesh slime is discarded.

Recovered fines are used to bring sand up to specifications. Thousands of tons of valuable sand, formerly lost, soon paid for the low cost of the Whirlcones®.

GIW's highly efficient Whirlcones® are also being used in the mining fields to deslime, degrit, classify, concentrate, make dam and mine backfill and to dewater or thicken where the overflow can be returned to the process or it can be discarded.

They are available in diameters from 6" to 50". Capital cost including the pump is 20 to 50% of conventional classifiers.

If you are losing fines from material −12 mesh to lightest slimes, write today. Recommendations and literature will be forwarded promptly.

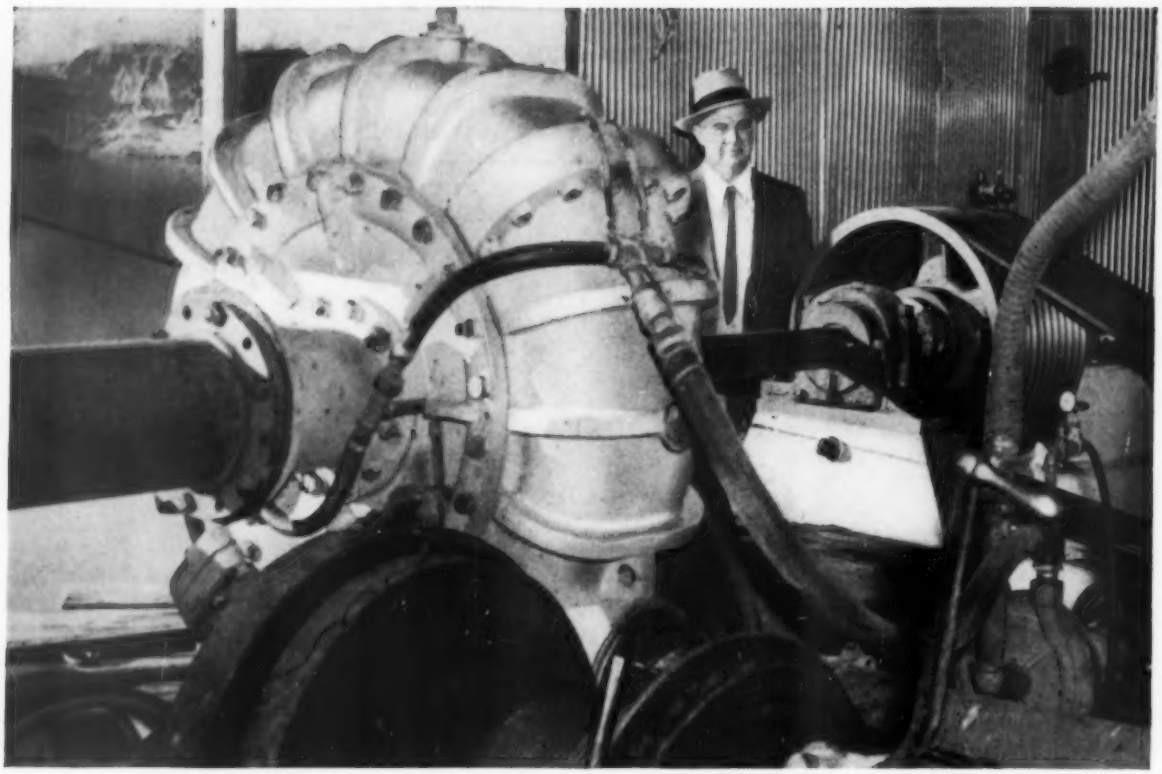
COTTRELL ENGINEERING
Division of
GEORGIA IRON WORKS CO.

GIW

Manufacturers of pumps, dredges, separators and accessories.

AUGUSTA • GEORGIA

Enter 231 on card, page 241



This dredge, operated by a prominent sand and gravel producer in Kansas, is equipped with a highly successful Thomas Ni-Hard pump installation.

Dredgers report Ni-Hard alloy pumps outwear others 4 to 6 times

From state after state come reports of the extraordinary service life of Thomas Ni-Hard pumps, made by Thomas Foundries, Inc., Birmingham, Alabama.

A West Virginia sand and gravel producer, for example, reports, "Since 1953, we have used only two Ni-Hard shell liners . . ."

A New Jersey company formerly replaced parts every 2 to 3 weeks . . . now says, "Today, we get approximately a year's service . . . a lifesaver."

From Nebraska: – ". . . after almost two years of pumping has required no repairs, major or minor."

From Arkansas: – ". . . by far the most efficient and economical pump we have ever used, our 40-year records prove."

From these reports, it's easy to see that *longer pump life means lower operating costs!*

And a large part of the credit for the outstanding durability of Thomas Pumps goes to Ni-Hard* nickel-chromium cast iron.

This alloy is the most abrasion resistant of all commonly used cast materials, out-lasting many 4 to 6 times . . . regularly outwearing manganese steel in pump service.

What's more, Ni-Hard alloy has demonstrated remarkable impact resistance . . . being widely used for drop balls, crusher linings, and for many other severe applications. In impellers, casings, linings, and other parts for pumps, Ni-Hard alloy has virtually eliminated cracks or impact erosion caused by gravel and rocks.

If severe wear is running up your operating costs – it will pay you to find out what Ni-Hard alloy can do. Inco's booklet, "Engineering Properties and Applications of Ni-Hard" gives you essential details, and Inco's "Ni-Hard Buyers' Guide" lists authorized producers throughout the country. Write us for your free copy.

*Registered trademark

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street New York 5, N. Y.

INCO NICKEL

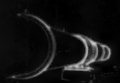
NICKEL MAKES ALLOYS PERFORM BETTER LONGER

Visit us at Booth No. 56 at the CRUSHED STONE SHOW — Feb. 22 thru 24 Conrad Hilton, Chicago.

PRIMARY GYRATORY CRUSHERS

SECONDARY GYRATORY CRUSHERS

JAW CRUSHERS

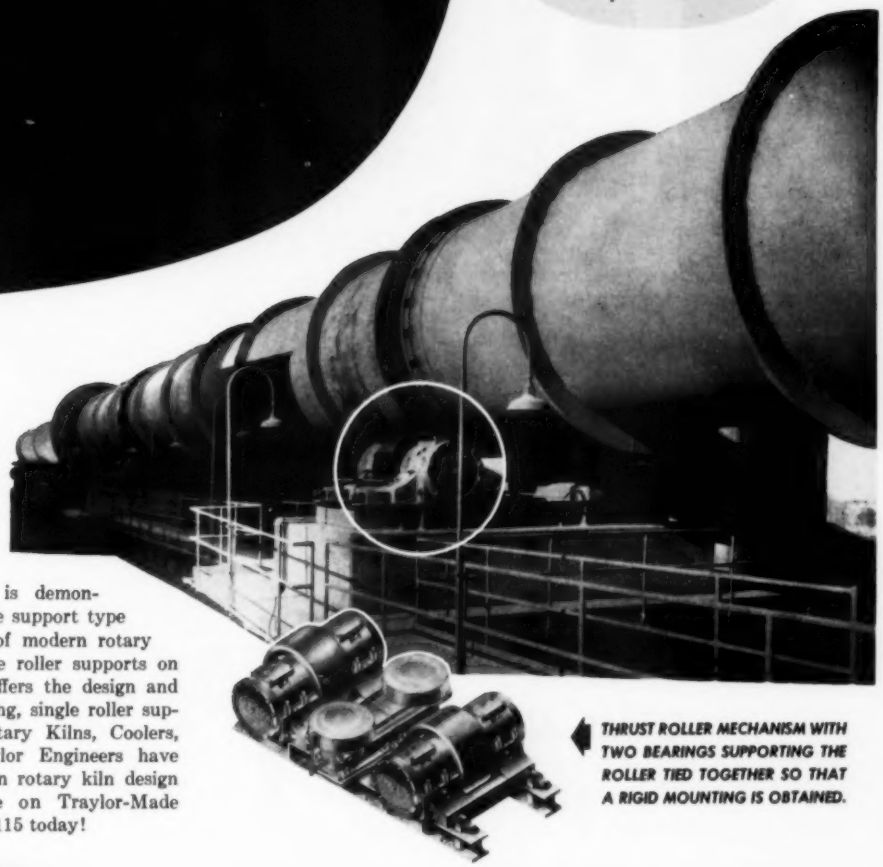

ROTARY KILNS

BALL MILLS

APRON FEEDERS

sign of engineering leadership

Traylor



ROTARY KILNS

Leadership in engineering is demonstrated by the Traylor single support type roller bearings. Efficiency of modern rotary kilns depends largely on the roller supports on which they run. Traylor offers the design and perfection of the easy aligning, single roller supports, used on Traylor Rotary Kilns, Coolers, Dryers and Slakers. Traylor Engineers have over fifty years experience in rotary kiln design and manufacture—for more on Traylor-Made kilns write for bulletin No. 1115 today!

THRUST ROLLER MECHANISM WITH TWO BEARINGS SUPPORTING THE ROLLER TIED TOGETHER SO THAT A RIGID MOUNTING IS OBTAINED.

Traylor

TRAYLOR ENGINEERING & MANUFACTURING DIVISION
FULLER COMPANY
1505 MILL ST., ALLENTOWN, PA.

Sales Offices: New York — Chicago — San Francisco
Canadian Mfr.: Canadian Vickers, Ltd., Montreal, P.Q.

FULLER COMPANY GENERAL AMERICAN TRADE MARK

EVERYONE'S INVITED . . .

NATIONAL CRUSHED STONE ASSOCIATION

43rd *Annual Convention and Manufacturers Division Exposition*

FEBRUARY
22-23-24—1960

Conrad Hilton Hotel
CHICAGO

Timely and Informative Subjects by Nationally-Known Speakers

Discussions of Special Interest to Executives, Operating Men and Salesmen

Exhibits Featuring the Newest Developments in Machinery and Equipment

for special hotel reservation cards write...

National Crushed Stone Association

1415 ELLIOT PLACE N.W., WASHINGTON 7, D. C.

FOR A SUPERIOR AGRICULTURAL LIMESTONE PRODUCT ... IN ONE LOW COST OPERATION

Whether the mesh is 10 or 20, Bradley Hercules Mills reduce limestone to a uniform fineness in a single operation without additional screening . . . . . produce finished material containing a large percentage of 60, 100 and 200 mesh. And Bradley Hercules Mills also eliminate manual operation through an electrical feed control. Their rugged construction . . . dustless operation . . . easy accessibility to grinding parts keep maintenance costs at an absolute minimum . . . provide maximum service, 7 days a week. In sizes to meet any plant's requirements for a superior grade of agricultural limestone . . . at moderate cost.

See Chemical Engineering Catalog or for complete information, write for Catalog No. 63

BRADLEY PULVERIZER CO.
superior grinding equipment since 1891

LONDON ALLENTOWN, PA. BOSTON

Newest Edition Now Available!

PIT and QUARRY'S

Comprehensive

PORTLAND CEMENT PLANT MAP

From Fairbanks, Alaska, to San Juan, Puerto Rico, from Newfoundland to Hawaii and across the breadth of continental United States, the word is out — PIT and QUARRY'S new Cement Plan Map has just been published!

Here is all of North America rolled up in a single package to provide the best available source for pinpointing the following information—

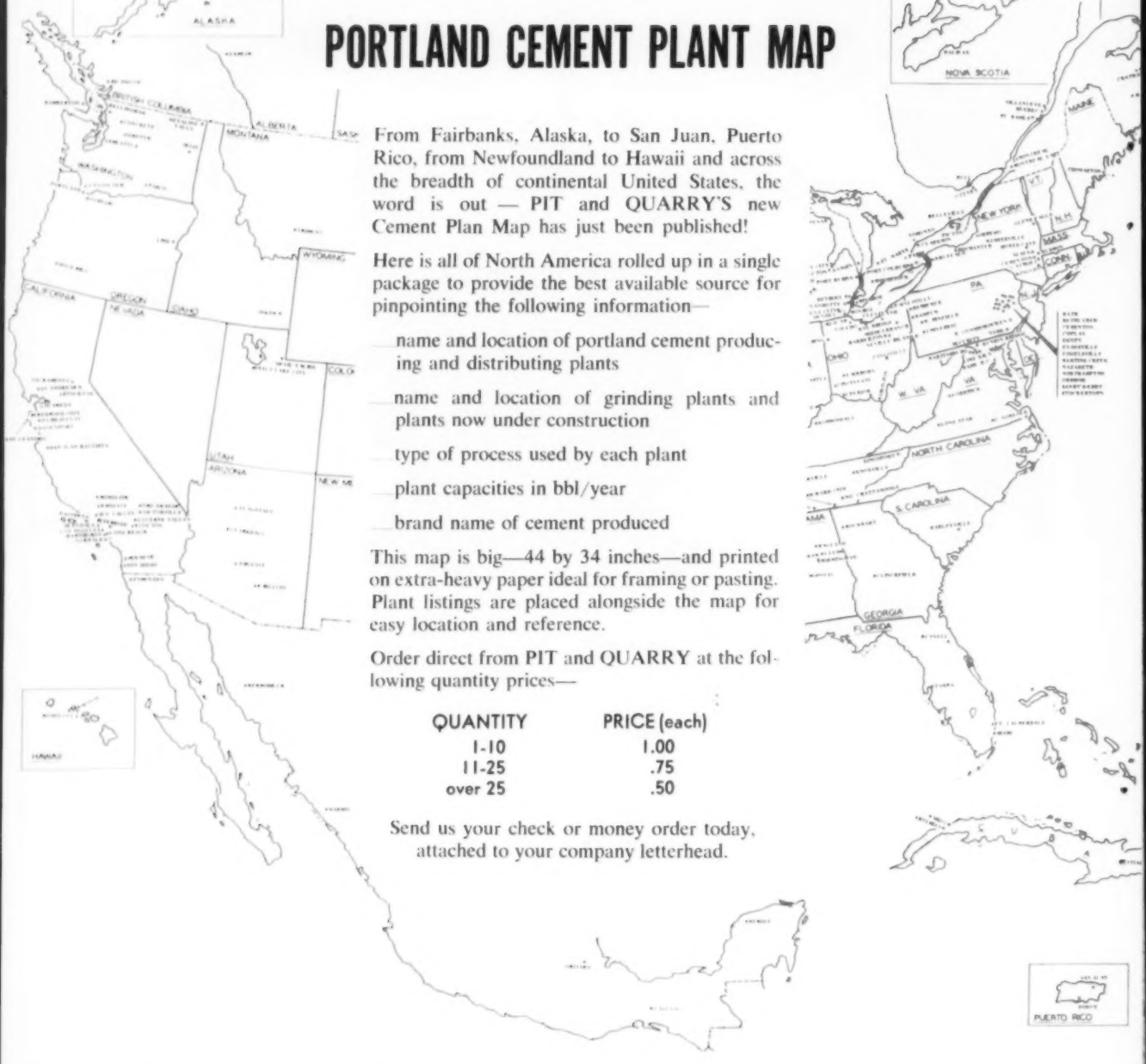
- name and location of portland cement producing and distributing plants
- name and location of grinding plants and plants now under construction
- type of process used by each plant
- plant capacities in bbl/year
- brand name of cement produced

This map is big—44 by 34 inches—and printed on extra-heavy paper ideal for framing or pasting. Plant listings are placed alongside the map for easy location and reference.

Order direct from PIT and QUARRY at the following quantity prices—

QUANTITY	PRICE (each)
1-10	1.00
11-25	.75
over 25	.50

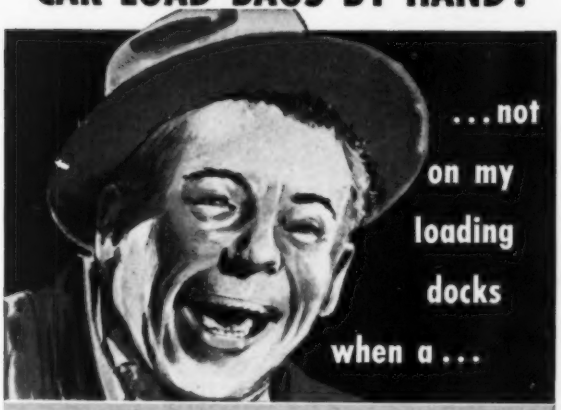
Send us your check or money order today, attached to your company letterhead.



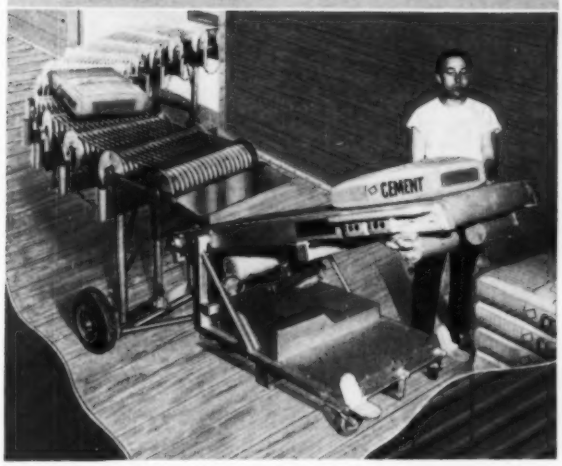
pit and quarry *Publications*

431 South Dearborn Street • Chicago 5, Illinois

CAR LOAD BAGS BY HAND?



POWER-CURVE automatic installation will show me a healthy saving in *just one season!*



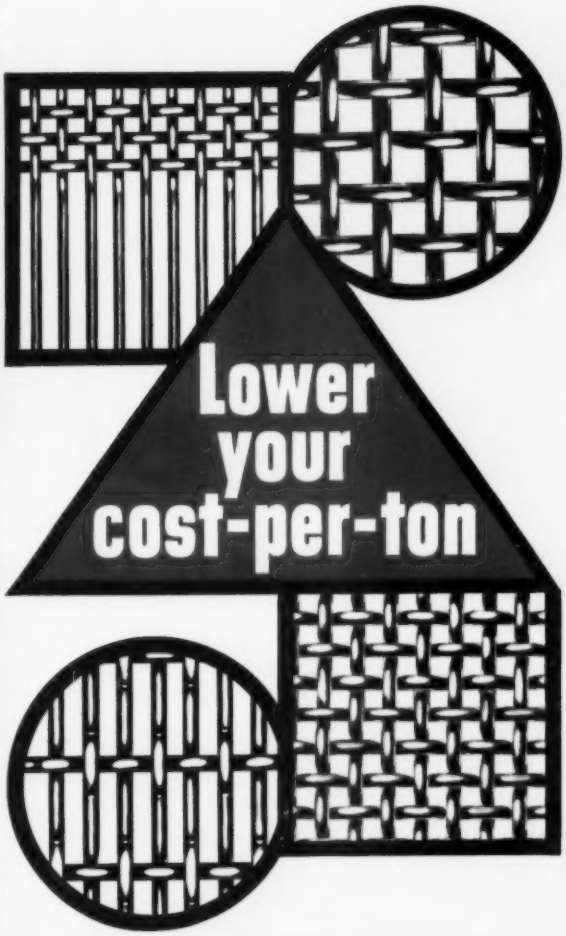
POWER-CURVE makes a quick payout on cement, loading without physical lifting, without interruption and *with just one man* . . . replaces a steady parade of hand trucks and labor. POWER-CURVE will flatten filled bags, route them to storage or to the dock, fill box cars or trucks from end-to-end and to full height neatly stacked against transit damage. POWER-CURVE can transfer, elevate, sort and select. It can unload, convey mixed loads, palletize and economize! It is used by virtually every major cement company in one or more plants. It is self-powered, mobile, fully flexible and variable in height . . . Write for information tailored to your requirements, no obligation.

TEN TYPICAL POWER-CURVE USERS

Alpha-Portland Cement Co.
Lone Star Cement Corp.
North American Cement Corp.
General Portland Cement Co.
Louisville Cement Co.
Penn-Dixie Cement Corp.
Standard Lime and Cement Co.
Universal Atlas Cement Co.
Whitehall Cement Mfg. Co.
Dewey Portland Cement Co.

POWER-CURVE
CONVEYOR COMPANY
2185 SOUTH JASON ST., DENVER 23, COLORADO

Enter 237-A on card, page 241



STARSTEEL
HEAVY DUTY **SPACE SCREENS**

Extremely hard wire of controlled ductility, woven more rigidly and tighter, withstands the most severe abrasion far longer, has maximum resistance to fatigue breakage.

Precision application of hookstrips, eliminates buckling and distortion—insures maintenance of accurate openings—makes installation under greater tension much easier—steps up output—prolongs screen life.

Compare STARSTEEL better-made screens in actual operation to cut your cost-per-ton. *Write for catalog.*

***FAST SHIPMENT** of most weaves, meshes, gauges*

Star will produce screens or cloth from stainless or other steel alloys, Monel, brass, bronze, copper, aluminum or any metal that can be drawn into wire. Inquiries invited.

STAR WIRE SCREEN & IRON WORKS, INC.
2515 San Fernando Road • Los Angeles 65, Calif.

Subsidiary of Ludlow-Saylor Wire Cloth Company, St. Louis, Mo.

Enter 237-B on card, page 241

BESSEMER PONCE DIAMOND

BULK LOADING SILOS OR A COMPLETE CEMENT PLANT!

NORTHWESTERN STATES PORTLAND CEMENT CO.

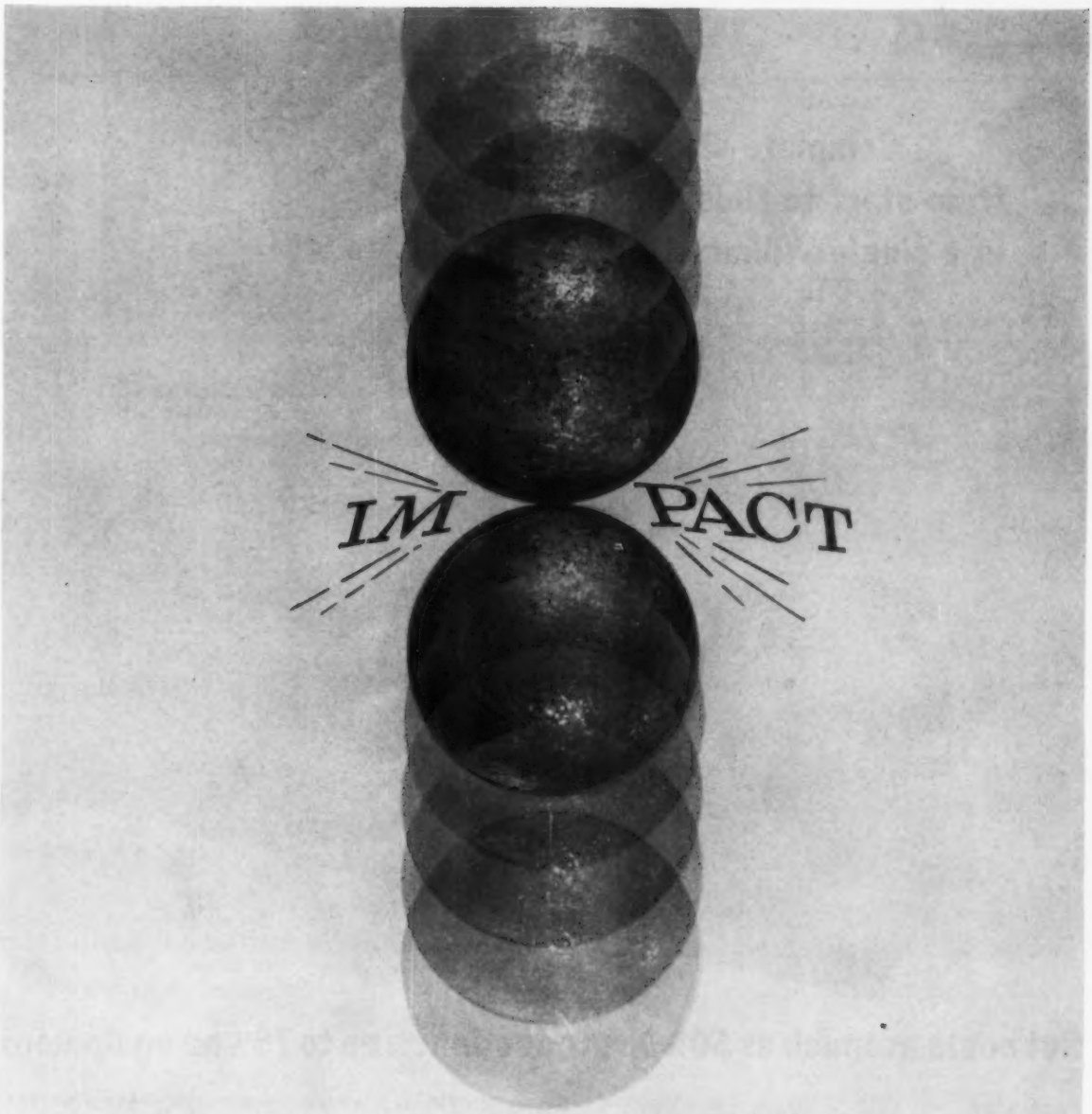
MACDONALD ENGINEERING CO.

22 MADISON ST.

SAN FRANCISCO
885 Bryant Street

CHICAGO

TORONTO
2349 Yonge St.



MAKES DUST OUT OF MOUNTAINS

Coates Carbex Grinding Balls are made of fine-grained, high-carbon steel. They are especially forged to attain more perfect sphericity, then heat treated to extreme hardness, but with toughness to withstand the *IM*PACT of milling without shattering.

Coates Grinding Balls have been proven "best buys" in actual production run tests, yet Coates conducts a continuing research program to improve its already highly rated product.

Call for Coates Triple-Forged Grinding Balls . . . built with care for longer wear.

Write for prices . . . All sizes—½" to 5" carried in stock for immediate shipment.

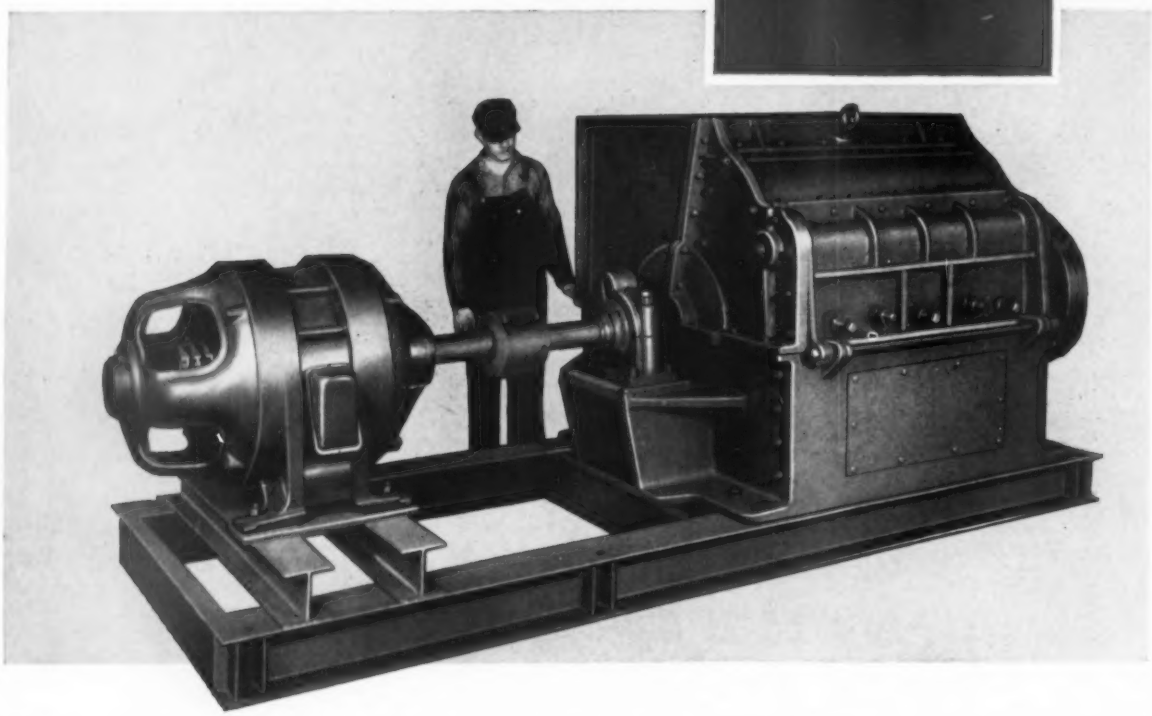
COATES STEEL PRODUCTS CO. CARBEX TRIPLE-FORGED BALLS

COATES

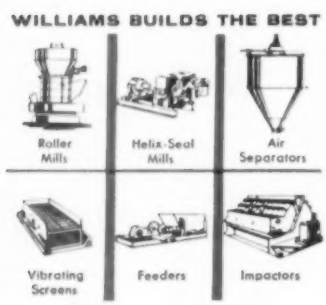
STEEL PRODUCTS COMPANY
GREENVILLE, ILLINOIS

LARGEST EXCLUSIVE MANUFACTURER OF GRINDING MEDIA

Complete size reduction... from start to finished product... in a single Williams Hammer Mill



Cut costs as much as 50% on production... up to 75% on equipment



In all normal crushing operations, a Williams heavy duty hammer mill can take most material and, *in a single pass*, reduce it to finished size! Production economies alone, in labor, power, maintenance, as well as stepped up output of better quality and more uniform products, will *cut costs up to 50%*.

Savings in original installations, *as high as 75%*, can also be expected. By making primary and secondary crushers unnecessary, a Williams hammer mill will eliminate all extra conveyors, drives, other equipment, special foundations and additional housing.

Williams hammer mills are built for daily rough and rugged service. Extra heavy manganese steel liners and breaker plates, oversize shafts, massive parts and reinforcements, all defy shock and wear, reduce downtime and replacements to nil.

If the cost price squeeze is one of your problems, get the facts about Williams hammer mills. *Write now for catalog.*

WILLIAMS
CRUSHERS GRINDERS SHREDDERS

PATENT CRUSHER & PULVERIZER CO.
802 ST. LOUIS AVE. St. Louis 6, Mo.

Oldest and Largest Manufacturers of Hammer Mills in the World

more information, please

Use postcard to receive literature or details on new equipment and products reported in this issue.

"NEW COLOR HORIZONS," a 38-page systems catalog released by *Rust-Oleum Corporation,* is a comprehensive treatise on rust and corrosion control by protective coatings. Technical data covers surface preparation, types of surfaces, application techniques, thinning and drying information, and a glossary of terms. 76 color application photos and 110 color chips show actual colors. **(301)**

BAY-CITY SERIES 40 CATALOG, issued by *Bay City Shovels, Inc.,* covers the ¾- cu. yd. Series 40 crawler, convertible to crane, dragline, clamshell, shovel, and hoe. Detailed photos of the major parts and assemblies are shown in 55 pictures, with a two-page spread of 23 job photos. **(302)**

THE MUDMASTER LOG WASHER is described in Bulletin MM-90, published by *McLanahan & Stone Corporation.* The bulletin includes construction and design information as well as a dimensional drawing and parts list. **(303)**

PORTABLE AND POWER CABLE for the mining industry is described in a revised bulletin from *General Electric.* Technical and specification data is given for the complete line of cables and for the various components. Splicing and terminating details are also included. **(304)**

HANCO SCREEN HEATERS manufactured by *F. R. Hannon & Sons* are described in a booklet containing a discussion of the theory of heater screens, heater unit specifications and approximate dimensions, and illustrations showing typical installations. Diagrams show four possible heating arrangements. **(305)**

MODEL 567 HIGHWAY-AIRPORT BASE STABILIZER PLANT, a 600-t.p.h. capacity unit manufactured by the *Madsen Works,* is detailed in Bulletin No. SP-59. Included are specifications, design information, and a drawing showing the location of various components and overall plant dimensions. **(306)**

THE RAYMOND FLUID BED DRYER, a development of the *Raymond Division, Combustion Engineering, Inc.,* is described in Bulletin No. 88. Design, typical applications, and operation of the unit are discussed. Fluidizing velocities cover a wide range of materials from light fine particles to dense materials ½ in. or more in size. **(307)**

A REBUILD WELDMENT CHART from *American Manganese Steel Division* gives step-by-step instructions for replacing tractor grouser bars and includes ordering information for manganese or carbon steel bars covering all leading makes of tractors. A similar chart provides instructions and specifications covering two types of dipper tooth repointer and repointer bars. **(308)**

KA-MO DRILLING AND BORING EQUIPMENT is described in a 12-page bulletin released by *Kwik-Mix Company.* The literature discusses the air, hydraulic, electric, and gasoline powered drills available, showing on-the-job photos of equipment. Specifications for both hand feed track and power feed track units are included. **(309)**

MODEL 600 RP HYDROVANE ROTARY COMPRESSOR is featured in a bulletin offered by *Davey Compressor Company.* Contents include complete specifications, action photos, and a listing of design features. The Davey 600 RP delivers 625 c.f.m. at 100 p.s.i. **(310)**

JANUARY ***PIT AND QUARRY*** ***1960***

Insert key numbers found below items on advertising, literature, and new equipment pages. Print company name if not keyed.

VOID AFTER 60 DAYS.

_____ _____ _____ _____ _____ _____

_____ _____ _____ _____ _____ _____

Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____

We Produce_____

PERMIT NO. 44
CHICAGO, ILL.
FIRST CLASS

BUSINESS REPLY CARD
No Postage Stamp Necessary If Mailed in the United States

—POSTAGE WILL BE PAID BY—

Pit and Quarry Publications
431 South Dearborn Street
CHICAGO 5, ILL., U.S.A.

more information, please

Use postcard to receive literature or details on new equipment and products reported in this issue.

SUPER-SERVICE GASOLINE ENGINES, manufactured by *Diamond T Motor Truck Company,* are detailed in literature which shows and describes construction and engineering features of Diamond T's 6 cylinder engines from 145 to 135 hp., and V-8 models of 207 and 235 hp. Charts show output of horsepower and torque of the various engines. Detailed specifications are included. **(311)**

HUM-MER ELECTRIC SCREENS are featured in a *W. S. Tyler Company* catalog which describes operating principles and application of the equipment, and lists the several types available. Dimensions and recommendations on applications are included. **(312)**

A WALLET-SIZED REFERENCE TABLE for converting the bag-per-minute rate of filled multiwall bags to tons-per-hour is available from *St. Regis Paper Company.* The table lists the tons-per-hour rate of from 1 to 30 bags per minute, for 100-, 80-, and 50-lb. bags. **(313)**

PHILADELPHIA VERTICAL MOTO-REDUCERS and in-line reducers are detailed in a catalog issued by *Philadelphia Gear Corporation.* The catalog describes the construction and mechanical features of motor reducers in 8 housing sizes for applications up to 125 hp. and output speeds of from 9 to 420 r.p.m. Load characteristics are outlined. **(314)**

ELECTRIC AND MECHANICAL VIBRATING-TYPE COOLERS AND DRYERS of both the direct and indirect type are covered in Catalog 953, issued by *The Jeffrey Manufacturing Company.* Included are sections on basic drying principles and the TMV variable amplitude unit. Drawings, photographs, specifications, and material weight charts are included. **(315)**

DIAMOND DRILL BIT CATALOG NO. 502, issued by *Anton Smit & Company, Inc.,* illustrates and describes the company's line of coring and non-coring drill bits, casing bits and shoes, reaming shells, and blasthole and pilot bits. Detailed information, including specifications and assembly data, is presented. **(316)**

TORQUE CONVERTERS in 12-, 15-, and 16-in. wheel sizes for industrial power transmission applications are covered in a folder from *Clark Equipment company.* In addition to detailed descriptions of optional equipment, such as clutch controls, reduction drive, etc., complete power curves for each of the three basic models are provided. **(317)**

HIGH ALLOY CASTINGS are discussed in Bulletin No. G-159, a publication of *The Duraloy Company.* The catalog covers static castings, centrifugal castings, and shell molded castings. Technical data includes physical properties tables for corrosion resistant, heat resistant, and abrasion alloys, plus standard designation and stress temperature curves for selected high alloys. **(318)**

MARLOW PUMPS, self-priming units with electric motor drive for permanent or semi-permanent installation, are detailed in literature from *Marlow Pumps.* A performance chart and maintenance information supplements data explaining construction and operating features. **(319)**

WELDING EQUIPMENT MAINTENANCE is the topic of a service bulletin published by *Tweco Products, Inc.* Called "Causes and Cures for Hot Running Welding Cables and Connections," this bulletin contains information on how to maintain welding equipment and electrical connections which receive heat abuses from the 9,000-10,000-deg. temperatures of the elecrtic arc. **(320)**

FIRST CLASS
PERMIT NO. 44
CHICAGO, ILL.

BUSINESS REPLY CARD
No Postage Stamp Necessary If Mailed in the United States

—POSTAGE WILL BE PAID BY—

Pit and Quarry Publications
431 South Dearborn Street
CHICAGO 5, ILL., U.S.A.

NEW SUBSCRIPTION ORDER FORM

Send PIT AND QUARRY to me for

____One Year $3* ____Two Years $5 ____Three Years $6

____Payment enclosed ____Bill me ____Bill company

Name_____Title_____

Company_____

Address_____

City_____Zone_____State_____

Type of business
and products _____

*U. S., U. S. Possessions, and Canada only.

Pan American countries, $10 a year; elsewhere, $15 a year.

For an old-fashioned winter — this new-fashioned Primacord

You can get tight knots and hook-ups even with stiff fingers when the weather's *cold!* Ensign-Bickford's new LO-TEMP Primacord is very flexible, easy to handle, and knots securely at *all* temperatures — even down to *minus* 40°F.!

LO-TEMP can be used for in-hole priming wherever conditions do *not* call for our more rugged types of Primacord. Use it as the trunkline for *all* hook-ups. Detonate with fuse and cap or electric blasting cap, side-taped about eight inches in from the end of the trunkline, and with the business end of the cap pointing in the direction of the blast.

Like all types of Primacord, LO-TEMP is very insensitive to initiation by shock, friction, sparks or electricity. When initiated with a blasting cap, it explodes at a velocity of 21,000 feet per second and has the initiating energy of a blasting cap along its entire length.

Square knot for trunklines
Loop-lock half hitch on Plastic Wirebound
Half hitch in trunkline around Plastic Reinforced downline

For connecting trunklines and downlines

THE ENSIGN-BICKFORD COMPANY

Simsbury, Connecticut — Since 1836

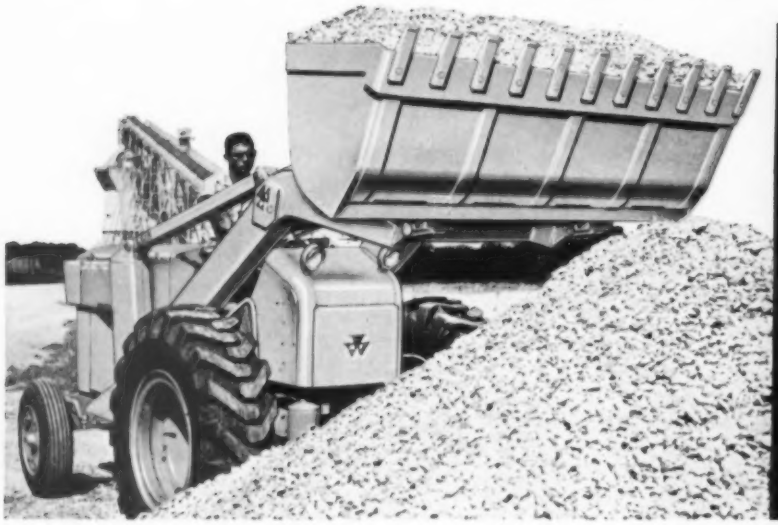
L-2

to finish ahead of
more expensive equipment

the MASSEY-FERGUSON 1001
TRACTOR SHOVEL

Speaks for Itself:

"HAVE DONE... CAN DO!"



Featuring Exclusive

INSTANT REVERSE

Go Forward or Back at a Touch of your Toe!

NO SHIFTING...

NO CLUTCHING...

NO LEVERS TO PULL!

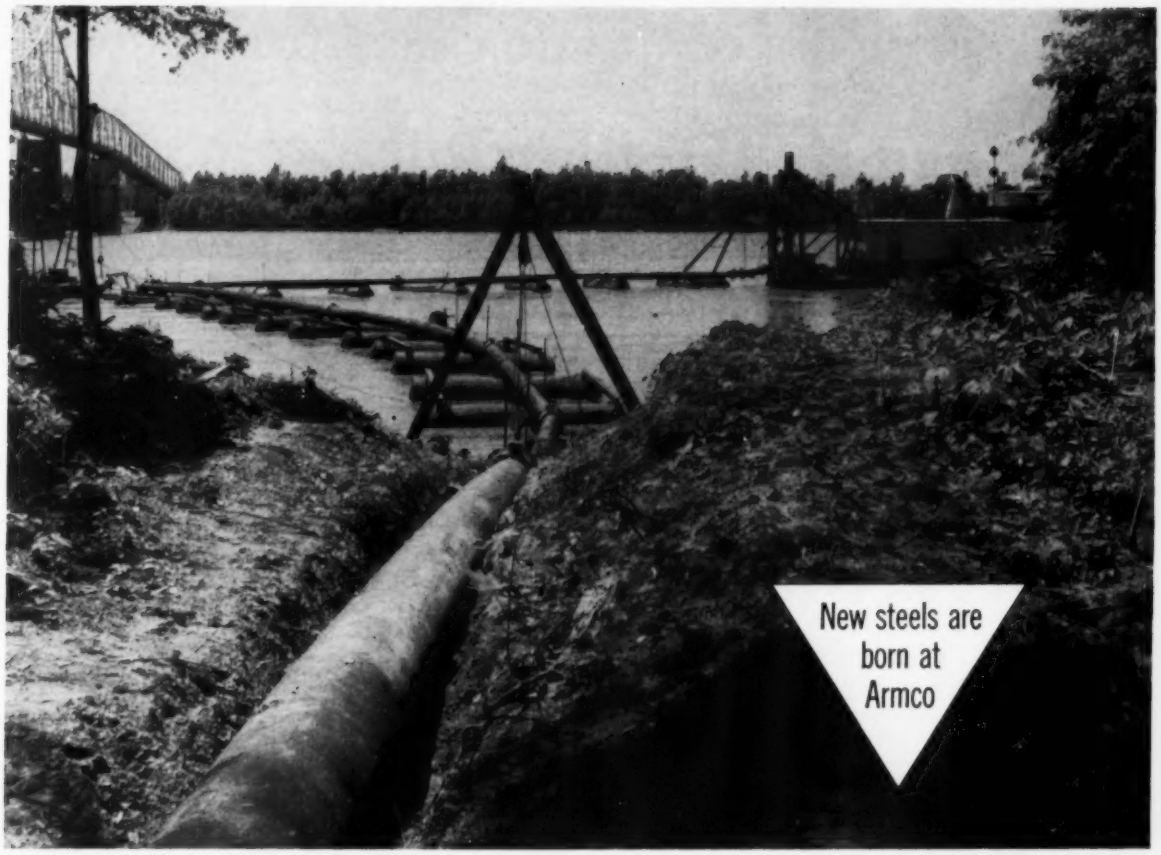
Fast in-and-out maneuverability, with exclusive "Instant Reverse," give the Massey-Ferguson 1001 power, speed, and agility to outperform larger, more expensive single-purpose machines! Direct thrust from low pivot points . . . 9300 lbs. pryout power . . . 43° rollback at ground level . . . and telescoping loader arms, make the rugged 1001 the *outstanding tractor shovel* buy in the 1-cu.-yd. class. A complete line of power-matched attachments for sweeping, dozing, lifting, ditching, or scarifying give low-cost versatility. It does it for others; it can do it for you. Let your M-F Industrial Dealer arrange an on-the-job demonstration today!

Why Wait? — Set a Date — We'll Demonstrate!

MASSEY-FERGUSON INDUSTRIAL DIVISION
Block 1000 South West St., Wichita 13, Kansas

Producing Sizeable Power for the "Sensational 60's"

MF 60-3



Armco Special Analysis Steel Pipe
Dredges 12,000 Gallons A Minute

Near Cairo, Illinois, it became necessary to widen two bridge approaches where the Mississippi and Ohio Rivers merge. Dirt for fill was considered too expensive, so it was decided to take sand from the Mississippi and use the sand as fill. Armco Special Analysis Steel Pipe was selected for the job.

Pouring out of the 18-inch Armco Pipe at 12,000 gallons a minute, the water-saturated sand was transformed into solid fill. After dredging, further compaction was not needed — the sand weighed 3500 to 3700 pounds to the cubic yard and the compaction ratio was 97%. The dredging contractor, Missouri Dredge Company, used 6000 feet of Armco Pipe for the job.

Armco Dredge Pipe is made of special steel developed by Armco to withstand abrasive materials and rough service. For complete details, write us for the free illustrated folder on Armco Special Analysis Steel Pipe. Armco Drainage & Metal Products, Inc., 4190 Curtis Street, Middletown, Ohio.

ARMCO DRAINAGE & METAL PRODUCTS

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company • The Armco International Corporation • Union Wire Rope Corporation

PROMINENT CONTRACTOR HAS REGRETS

WISHES HE HAD

THOMAS PUMPS

on ALL his dredges!

MERRIWETHER CONSTRUCTION COMPANY

General Contractors

MOBILE, ALABAMA
October 13, 1959

Thomas Foundries, Inc.
P. O. Box 1111
Birmingham 1, Alabama

Gentlemen:

Our dredge, "The Oliver Douglas", has completed the big dredging job awarded us in 1958 for which it was originally built. In building this dredge, we wanted the best equipment it was possible to obtain because we realized that it was a tough job as well as a big one.

Our 16" Thomas Pump enabled us to complete this job without delay and is ready for another big job with its' original parts. The pump proved to be a compliment to our judgement in making the selection.

We would also like to express our appreciation for the cooperation of your representatives for assisting us whenever requested, both on and off the job.

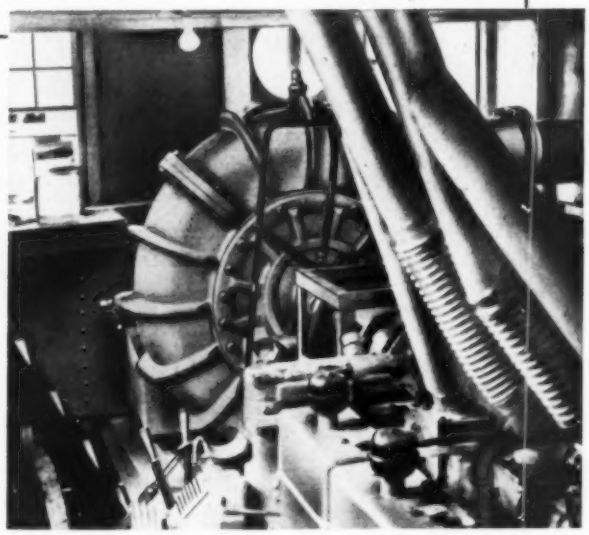
We regret our other dredges are not equipped with Thomas Pumps at the present time, but we assure you that it will not be long before they will be. Thank you for your past favors, we are

Yours very truly,

Merriwether Construction Co.

BY Oliver Douglas

Merriwether Construction Company, Mobile, Alabama, an outstanding operator, after a years experience on a "big tough job" says "THE THOMAS PUMP PROVED TO BE A COMPLIMENT TO OUR JUDGMENT." Their big regret now is that all their dredges are not equipped with Thomas Pumps.



Interior view of dredge "Oliver Douglas" showing installation of Thomas Pump discussed in letter above.

This Series NOL Thomas DURABLE Dredge Pump, 18" suction and 16" top horizontal discharge, was installed on the dredge "Oliver Douglas" in 1958. Driven by diesel engines aggregating 800 horsepower, this pump completed the above job without delay, without repairs and new parts, and is now ready for another job.

Unique Thomas design, enabling the use of GENUINE, Dependable Thomas Ni-Hard, makes such performance possible. This design and modern material produces extra long life as well as high initial and sustained efficiency.

This performance record, backed up by engineering service and cooperation from the Thomas Organization, causes Merriwether to state "WE ASSURE YOU IT WILL NOT BE LONG BEFORE OUR OTHER DREDGES ARE EQUIPPED WITH THOMAS PUMPS."

"YOU CANNOT BUY AT ANY PRICE A MORE DURABLE PUMP FOR DREDGING— YOU CANNOT BUY ANOTHER PUMP THAT WILL MAKE YOU AS MUCH MONEY."

(Thomas Pumps available in sizes 6" through 16")

THOMAS FOUNDRIES Inc.

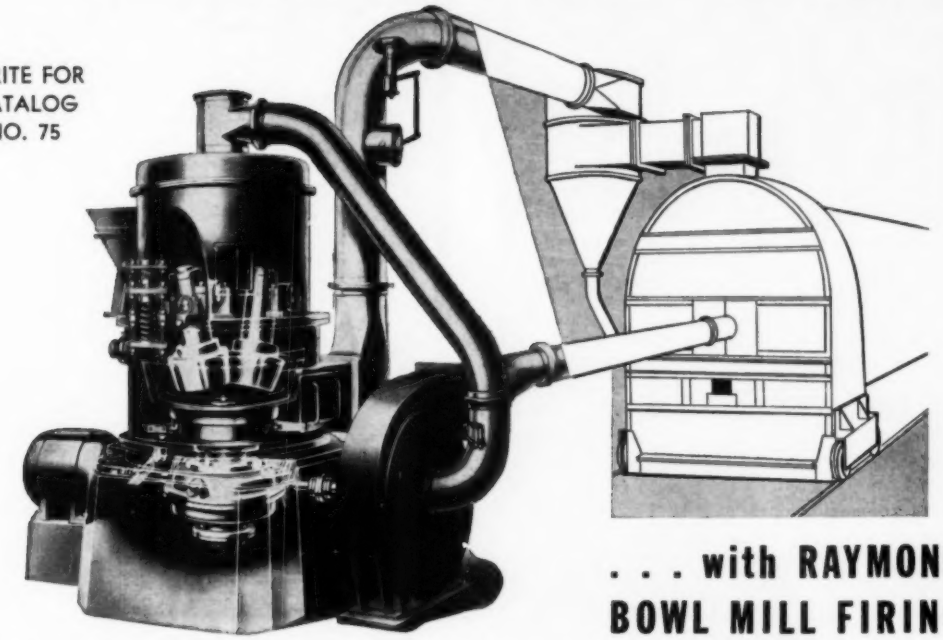
P. O. BOX 1111, BIRMINGHAM, ALABAMA

Get high-level efficiency...

IN COAL FIRING AND KILN PERFORMANCE

C-E

WRITE FOR CATALOG NO. 75



. . . with RAYMOND BOWL MILL FIRING

THE success of the Raymond Bowl Mill is told by its impressive record: A quarter-century of service to industry . . . more than 390 units in use on kiln firing alone . . . total rated capacity in excess of 18½ million tons of coal annually . . . world-wide application on rotary kilns for lime, cement, dolomite and other products. Summing up the following advantages, will show why the Raymond Bowl Mill develops maximum BTU utilization of powdered coal.

BOWL MILL

- Handles coal of any grade or moisture content
- High availability and wide range capacity
- Maintains uniform grind and proper coal-air mixture
- Flexible control and automatic operation
- Noiseless, dustless operation
- Record low maintenance

ROTARY KILN

- Increased kiln production
- Superior quality of lime or cement
- Large savings in fuel costs
- Maximum burning efficiency
- Overall operating economy
- New low costs in cement and lime production.

COMBUSTION ENGINEERING, INC.

Raymond Division

1122 W. Blackhawk Street
CHICAGO 22, ILLINOIS

SALES OFFICES IN PRINCIPAL CITIES

Combustion Engineering-Superheater Ltd., Montreal, Canada

LEVER-TYPE JAW CRUSHER STILL IN USE AFTER 36 YEARS
—at Keystone, So. Dakota

LOWER COST PER YEAR

RELIANCE HEAVY-DUTY CRUSHER

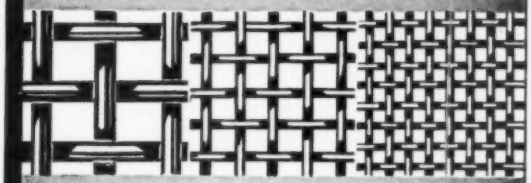
- Heavier, stable—you save money on upkeep.
- Minimum abrasion — outlasts other designs 3 to 1.
- Long jaw plates — adjustable for fineness.
- Crushing, screening and washing plants—50 to 1,500 tons-per-day capacity—engineered to your needs.

Booklet on request, pictures installations.

UNIVERSAL ROAD MACHINERY CO.
Main office and factory: Kingston, N. Y.
New York City office: 117 Liberty St.

Enter 248-A on card, page 241

STRONG AS ARMOR
NAT-ALOY
Woven Wire Screens



Reliable Nat-Aloy woven wire cloth is specified throughout industry for maximum screening accuracy and economy. Available in flat surface, lock crimp, double crimp, rectangular and long slot openings. All sizes, meshes and gauges—prompt shipment.

WE OFFER NOW... SUPER NAT-ALOY
OIL TEMPERED WOVEN WIRE CLOTH
★ GREATER RESISTANCE TO ABRASION
★ MORE TONNAGE AT LOWER COST
★ FEWER COSTLY CHANGE OVERS

Write for information. Also stainless steel wire screens.

NATIONAL WIRE CLOTH COMPANY
252 W. Fairfield Ave., St. Paul 1, Minnesota

Enter 248-B on card, page 241

What they don't know will hurt them

They must have first-rate schools

ADVERTISING COUNCIL PUBLIC SERVICE

BETTER SCHOOLS BUILD BETTER COMMUNITIES

FREE BOOKLET tells how *you* can help make your school better. Based on the recent study by Dr. James B. Conant, former President of Harvard, it answers such questions as—"What courses should *all* students take?" "Should students be grouped by ability?" "When is a school too small?" and many more. For your free copy, and other helpful information, write: **Better Schools, 9 E. 40th St., N. Y. 16, N. Y. Do it today!**

A BOON TO TRUCK CRANE OWNERS

INCREASE YOUR MOVING CAPACITY in both Short and Long Stick operations UP TO 50% with

ROLLING OUTRIGGERS
TRADE MARK PATENT PENDING

that FIT ALL MAKES AND MODELS OF TRUCK CRANES

- ALLOW NEAR-CAPACITY LOADS TO BE MOVED OVER LEVEL AND RUGGED TERRAIN
- ELIMINATE COSTLY, TIME-CONSUMING PRACTICE OF SETTING AND RE-SETTING OUTRIGGERS AND PADS
- ALLOW GREATER LOAD DISTRIBUTION AND PREVENT OVER-STRESSING CRANE CARRIER
- TANDEM, PIVOTAL ACTION WHEEL ASSEMBLY
- RUGGED CONSTRUCTION
- INSTALLED IN FIVE QUICK MINUTES

One Pair *Single Tandem Units*, Weight approx. 1360 lbs.

One Pair *Double Tandem Units*, Weight approx. 2630 lbs.

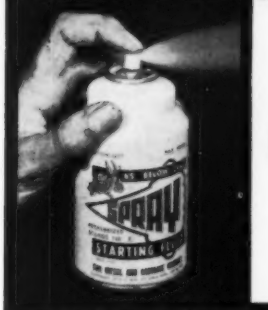
"ROLLING OUTRIGGERS" INSURE MOBILITY, SAFETY AND INCREASED PROFITS

Manufactured by Lincoln Welding Works, Inc., 1320 So. "A" St., Las Vegas, Nevada

WRITE FOR NAME OF "ROLLING OUTRIGGERS" DEALER IN YOUR AREA

SOME EXCELLENT DEALERSHIPS ARE STILL AVAILABLE

Enter 249-A on card, page 241



START ENGINES EVERY DAY WITH SPRAY...

STARTING FLUID FOR DIESEL & GASOLINE ENGINES

Get more starts, quicker starts, at lower cost with SPRAY STARTING FLUID. Both the fluid and propellent burn . . . there's no waste! Each pressurized can contains enough fluid for many starts . . . starts that will sustain combustion until a smooth running engine can take over. Our greater supply of "vapor pressure" at all temperatures, atomized at a high initial rate, shortens cranking and warm up time, reduces dilution, prevents electrical and starting system wear, saves wasted man hours and equipment down-time. SPRAY is atomized for safe application and quantity control . . . use only as much as the engine requires. Field-proven SPRAY STARTING FLUID will start the toughest engine down to 65° below zero . . . but for year 'round economy start engines every day with SPRAY! Sold through automotive jobbers everywhere.

Ask about INSTNSTART closed system starting.

Insist on the can with the "balky donkey" trademark.

SPRAY PRODUCTS CORPORATION

P. O. Box 844 • Camden 1, New Jersey

Enter 249-B on card, page 241

WHICH FILTER BAG FABRIC FITS YOUR NEEDS?

Why not ask one of the largest manufacturers of industrial textiles? Albany Felt Company can furnish any fiber, in any fabric – and thus is in a position to make a *completely impartial* recommendation.

Your inquiry is invited. No obligation, of course.

ALBANY FELT COMPANY

INDUSTRIAL FABRICS DIVISION

MAIN OFFICE AND PLANT: ALBANY 1, N. Y.

ATTACH THIS COUPON TO YOUR LETTERHEAD – MAIL IT TODAY

ALBANY FELT COMPANY
INDUSTRIAL FABRICS DIVISION
ALBANY 1, N. Y.

☐ Please send us your latest Filter Bag bulletin.

☐ Have your representative call to supply us with a free, scientific analysis of our filter fabric requirements.

Enter 249-C on card, page 241

STEP UP YOUR ROCK DRILLING WITH GARDNER-DENVER QUALITY

Only Gardner-Denver offers five crawler drill models. Swing boom or standard "Air Trac"® drills. Extra-long tracks available for greater traction and stability. Efficiently grouped controls. Choose powerful 4", 4½" or 5½" bore drills.

Gardner-Denver all-weather rotary portables assure dependable and efficient compressed air power. Six capacities from 85 to 900 cfm. Wheel- or skid-mounted. Readily maintained on location.

Handle clean-up and secondary blasting with speed and ease. Use Gardner-Denver sinkers. A size and weight for every need. Powerful . . . easy handling . . . good hole cleaning ability.

Gardner-Denver's "Mole-Dril"* is a rugged, heavy-duty percussion drill, designed to cut deep bore holes with unusual speed. It delivers more foot-pounds of energy to the bit than any other drill. Maximum drilling obtained in the hardest or softest rock.

Ask the Gardner-Denver engineer about percussion drills for your rotary rig. His experience can help you select the best size and type for your pit. Remember, the Gardner-Denver "Mole-Dril" is MORE POWERFUL... MORE PRODUCTIVE . . . MORE EFFICIENT!

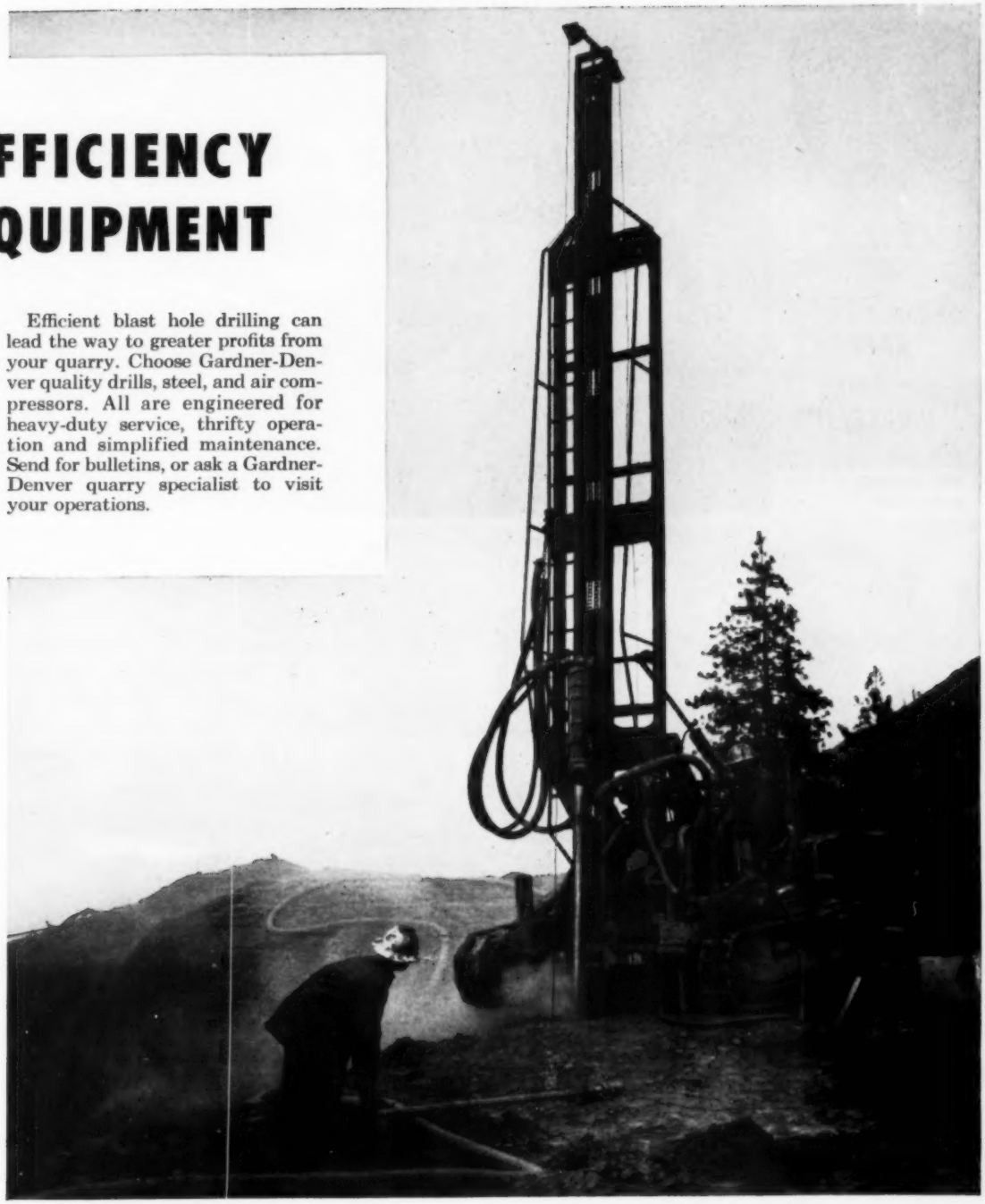
*Trade-Mark

TIME TO TALK TIME-SAVING

Your Gardner-Denver quarry specialist is a good man to know. Ask him how Gardner-Denver equipment can help save time, cut costs, increase production. At Gardner-Denver there's no substitute for men—our 100-year philosophy of growth.

EFFICIENCY EQUIPMENT

Efficient blast hole drilling can lead the way to greater profits from your quarry. Choose Gardner-Denver quality drills, steel, and air compressors. All are engineered for heavy-duty service, thrifty operation and simplified maintenance. Send for bulletins, or ask a Gardner-Denver quarry specialist to visit your operations.



The best drill steel you can buy. Gardner-Denver carburized and shot-peened sectional rod and couplings. Hardened surface resists abrasion. Tough core provides compressive strength. Lasts longer. Cuts your steel cost per ton of rock.

Heavy-duty, self-propelled crawler drill. Gardner-Denver HT143 carries powerful drill with 5½" hammer diameter. Handles 20' sectional steel changes. Finger-tip controls. A high-performance drill for either bench or toe hole drilling.

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

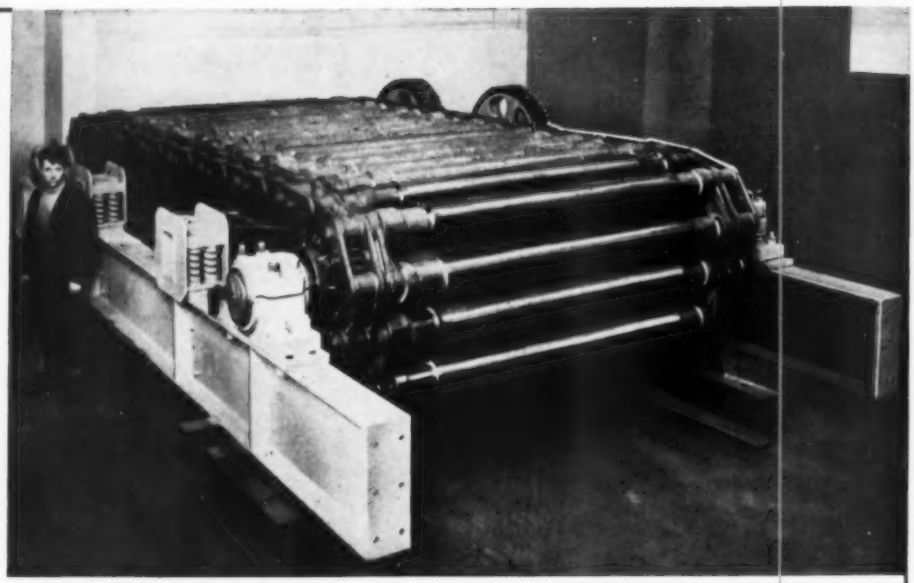
ROSS

CHAIN FEEDERS

DROP-BAR FEEDERS

TWO-ROLL GRIZZLIES

FOR MINING & QUARRYING INDUSTRIES



Photograph shows a No. 10 Ross Patent Drop-Bar Feeder assembled before despatch to Llanddulas Quarries for feeding a 60" x 42" Jaw Crusher. The photograph illustrates the very heavy construction of the apron, in this case 7" dia. steel bars at 10" centres and the heavy shock-absorbing coil springs which support the apron.

ROSS SCREEN & FEEDER CO.,
100 Quimby Street, Westfield, N. J., U.S.A.

ROSS ENGINEERS LIMITED
11 Walpole Road, Surbiton, Surrey, England

CANADIAN LICENSEE: DORR-OLIVER-LONG, LTD., ORILLIA, ONTARIO

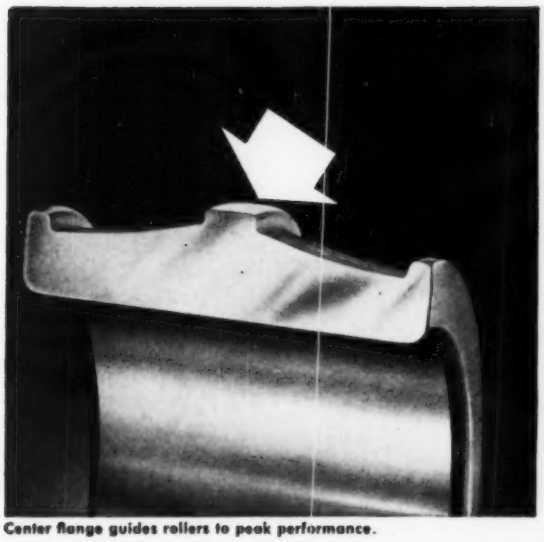
Enter 252-A on card, page 241

for IMPROVED PERFORMANCE
SPRAYING SYSTEMS
SPRAY NOZZLES
• Choose from the industry's most complete selection of capacities and types to obtain the nozzles that best fit your job. Improve spraying efficiency and lower your spraying costs. Wide choice of nozzles for washing, dust control operations and concrete curing.
Write for Catalog 24
WRITE FOR Catalog 24... forty-eight pages with complete data on nozzle types, capacities and performance.
SPRAYING SYSTEMS CO.
3224 RANDOLPH ST., BELLWOOD, ILL.

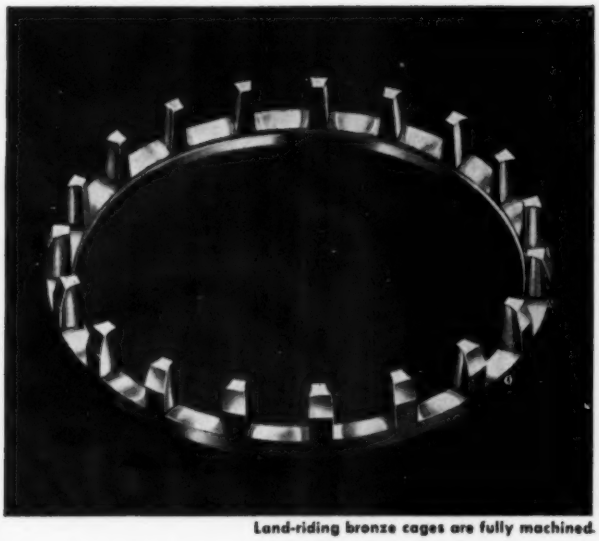
Enter 252-B on card, page 241

how COLUMBIA ingenuity and armor-tough manganese steel crusher parts increased production 30%, jaw life 75%, on rugged Utah job...
This detailed case history describes amazing accomplishments for Salt Lake County, in Columbia Field Report No. 501. Send for your Free copy.
FIELD REPORT
Columbia's complete line of ARMOR-TOUGH crusher parts provides more wear where it counts, where rock meets metal. For greater production, longer life, specify COLUMBIA.
Columbia
COLUMBIA STEEL CASTING CO., INC.
933 N.W. Johnson, Portland 9, Oregon

Enter 252-C on card, page 241

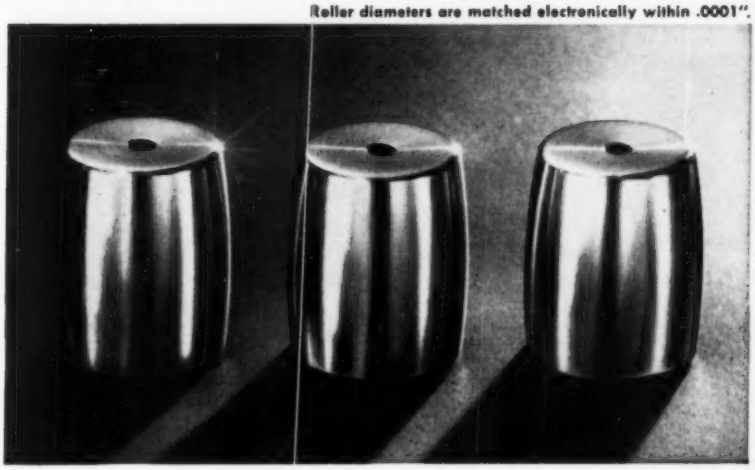


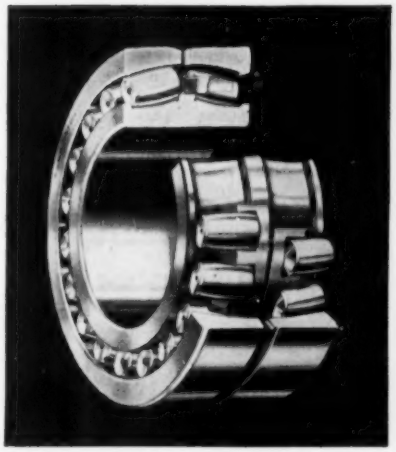
Center flange guides rollers to peak performance.



Land-riding bronze cages are fully machined.

Roller diameters are matched electronically within .0001".





Consider every design feature and you'll choose Torrington!

Torrington has compromised none of the operating design features of its Spherical Roller Bearing, because application experience has proved them essential to superior bearing performance.

There's no substitute for the stabilizing effect of the integral center guide flange. Torrington's asymmetrical roller seeks this flange under load. Skewing and stress concentrations are eliminated. Every roller carries its share of the load, for roller diameters are matched electronically within .0001" for even load distribution.

Rollers are precisely spaced by fully machined land-riding bronze cages that withstand even the high stresses of eccentric service. Two independent cages, one for each row, prevent roller drag and side stresses under thrust loads. Size-stabilized races prevent "growth" or change in dimension in service.

These features mean a cooler-running, longer-lasting bearing. When you buy bearings, look into *every* detail, and you'll choose Torrington. **The Torrington Company, South Bend 21, Ind.—and Torrington, Conn.**

TORRINGTON BEARINGS

District Offices and Distributors in Principal Cities of United States and Canada

Superior performance features of TORRINGTON SPHERICAL ROLLER BEARINGS:

- Integral guide flange for roller stability
- Asymmetrical rollers seek flange for positive guidance
- Electronically matched rollers
- Size-stabilized races
- Fully machined land-riding bronze cages
- Controlled internal clearances
- Even load distribution
- Inherent self-alignment
- Long service life

Send for new Spherical Roller Bearing Catalog No. 258

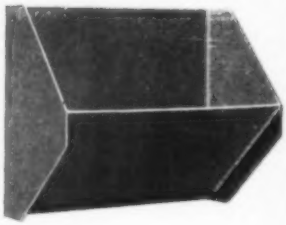
SPHERICAL ROLLER • TAPERED ROLLER • CYLINDRICAL ROLLER • NEEDLE • BALL • NEEDLE ROLLERS • THRUST

TOUGH
CONVEYING and ELEVATING CONDITIONS ?

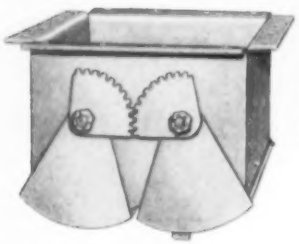
STANDARD METAL'S users lick TOUGH problems Every Day!

STANDARD METAL'S CONTINUOUS ELEVATOR BUCKET STYLE No. 2

This long-life bucket resists wear — delivers outstanding service and economy under severest conditions. This style is just one of the complete line of low-cost, rugged steel buckets manufactured by Standard Metal. Available in Salem, Style "A" and other continuous style buckets.



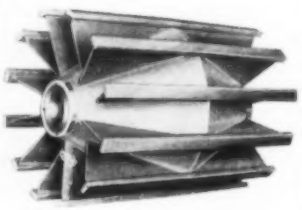
STANDARD METAL'S BIN GATES



Here's the all-steel, gear-operated Duplex Bin Gate for faster, easier material handling at minimum cost. Now supplied standard with twin bracket at bottom of gate, drilled to accommodate bolt for fulcrum lever.

STANDARD METAL'S WING-TYPE SELF-CLEANING PULLEY

Includes Taper-Lock Split Bushing to save time and trouble when mounting shaft. These pulleys are light in weight, yet their all-steel welded construction resists breaking, and delivers many years of trouble-free, low-cost service. Also available with solid hubs bored to specifications.

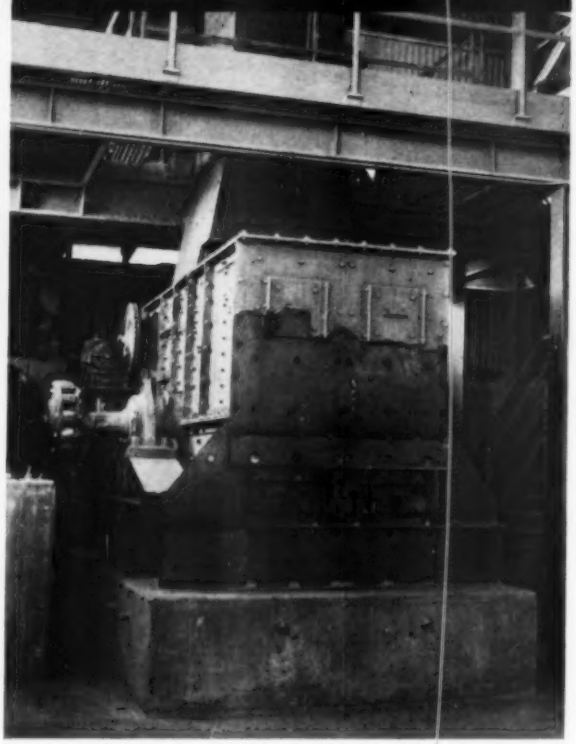


Contact us for full details and quotations on your particular needs in elevating and conveying equipment—for new installations or replacements. Ask for the catalog showing the complete Standard line.

STANDARD METAL MFG. CO.
110 CENTER ST. MALINTA, OHIO

Enter 254-A on card, page 241

Another size reduction problem solved by Hammermills, Inc.



Bulldog Non-Clog Hammermill

Crushes 375 to 400 tons wet limestone per hour

Limestone fed to this primary Hammermill at a new Midwestern cement plant contains 12% silica. It is mixed with clay and is high in moisture. The Bulldog Non-Clog Hammermill crushes this material at a rate of 375 to 400 tons per hour with a power consumption of 600 h.p.

Bulldog Non-Clog Hammermills are known throughout the industry for their ability to handle tough jobs. They'll give more capacity per horsepower. They require less maintenance.

Hammermills, Inc. can help you lower costs and increase your capacity. For the names of the Hammermills representative in New York, Chicago, St. Louis, Toledo, Dallas, Denver, Los Angeles, and Melbourne, Fla., simply write us.

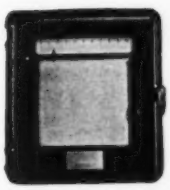
Manufacturers of Hammermills for primary and secondary crushing • Impactors • Jaw Crushers • Roll Crushers • Cone Crushers • Wobbler Feeders • Apron Feeders

HAMMERMILLS, INC.
Subsidiary of PETTIBONE Mulliken Corp.
625 C Avenue N. W., Cedar Rapids, Iowa

Enter 254-B on card, page 241

STOP FUEL WASTE!

Rising costs of production and shrinkage of profit margin emphasize the continued need for economy at every possible point. You can save fuel and improve kiln operation by providing your Burner with a continuous record of oxygen, carbon dioxide, and combustibles in the flue gas. A continuous record of oxygen permits complete control of the air supply; combustibles analysis indicates oxygen demand under all conditions; the carbon dioxide record reflects the state of the calcining process. Diligent use of the Cambridge Gas Analyzer results in lower fuel consumption, more uniform product and dollars saved!



Records the whole story continuously on a single chart.

Send for literature

CAMBRIDGE INSTRUMENT CO., INC.
3565 Grand Central Terminal New York 17, N.Y.

CAMBRIDGE GAS ANALYZERS
PIONEER MANUFACTURERS OF PRECISION INSTRUMENTS

Enter 255-A on card, page 241

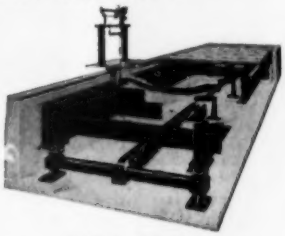
Winslow TRUCK SCALES

PIT AND PITLESS TYPES

CABINET DIAL
Weight indication available includes ball bearing poise weighbeams, direct reading and weight imprinting types, and dial equipment with or without weight printer.

Write or phone for more information
PHONE NORTH 1231

TYPE CS—PORTABLE—PITLESS
Type CS scales, pitless installation, roller bearings, heavy duty, low maintenance. Capacities 15 tons thru 50 tons. Platform sizes 18′ x 9′ thru 40′ x 10′, wood or steel deck.



TYPE S—PIT SCALE
Type S scales, pit installation, roller bearings, heavy duty, low maintenance. Capacities 15 tons thru 60 tons. Platform sizes 22′ x 9′ thru 60′ x 10′ for wood or concrete decks.

WINSLOW GOVERNMENT STANDARD SCALE WORKS, INC.
4830 NORTH 25TH ST. TERRE HAUTE, IND.

Enter 255-B on card, page 241

THERE ARE HIDDEN DOLLARS IN SURPLUS EQUIPMENT!

. . . and the way to find them is by advertising in PIT and QUARRY'S Broadcast Section

DEADLINE FOR FEBRUARY ISSUE IS JAN. 22

PIT AND QUARRY PUBLICATIONS, 431 S. DEARBORN ST., CHICAGO 5, ILL.

CONTRACT CORE DRILLING

EXPLORATION FOR MINERAL DEPOSITS
INCLUDING URANIUM & LIMESTONE — ANYWHERE

FOUNDATION TEST BORING

GROUT HOLE DRILLING

Skilled crews and complete stock of core drills and accessory equipment maintained at all times

Core Drill Contractors for more than 60 years

JOY MANUFACTURING CO.
Contract Core Drill Division
MICHIGAN CITY, INDIANA

Enter 255-C on card, page 241

DEPENDABLE
FOR 60 YEARS
Woven Wire
ALLOY SCREENS
TWIN CITY IRON & WIRE CO.
St. Paul, Minnesota

Enter 255-D on card, page 241

W!!

NSGA
NATIONAL SAND AND GRAVEL ASSOCIATION
44th ANNUAL CONVENTION

NATIONAL READY MIXED NRMCA CONCRETE ASSOCIATION
30th ANNUAL CONVENTION

Biennial Show

CHICAGO • FEBRUARY 15-19, 1960

- **ONE SHOW SO BIG IT COVERS THE COLISEUM AND CONRAD HILTON.** (Free, fast 2-way bus service between.)
- **ACRES OF NEW IDEAS** to benefit your business.
- **SHOW DAYS:** Monday and Tuesday, February 15-16, are Show days. Show continues Wednesday, closes Thursday.
- **CONVENTION DAYS:** Wednesday, Thursday, Friday.
- **GIVES YOU 2 FULL SHOW DAYS** free from Convention meetings.
- **ALL REGISTRATIONS** in Exposition Hall Lobby of Conrad Hilton, starting Friday, February 12. Registration and Show admission free to *producers and users* of sand, gravel and ready mixed concrete.

Come and see . . .

Allis-Chalmers Manufacturing Co., Construction Machinery Div.

Allis-Chalmers Manufacturing Co. Industries Div.

Allison Division General Motors Corp.

American Hoist & Derrick Co.

American Manganese Steel Div., American Brake Shoe Co.

American Pozzolan Co.

Autolene Lubricants Co.

Baldwin-Lima-Hamilton Corporation

Barber-Greene Co.

Blaw-Knox Company Construction Equipment

Bucyrus-Erie Co.

Building Supply News

Burkhart Engineering Associates, Inc.

Butler Bin Co.

C & W Sales Co., Inc.

Calcium Chloride Institute

J. I. Case Co.

Caterpillar Tractor Co.

Chain Belt Co. Bin and Batcher Div.

Chain Belt Co. Construction Machinery Division

Chain Belt Co. Industrial Div.

Chevrolet Motor Div. General Motors Corp.

Chicago Fly Ash Co.

what these blue-ribbon exhibitors offer to help you make money

Clark Equipment Co.

Clayton Manufacturing Co.

Cleaver-Brooks Co.

Columbia-Southern Chemical Corp.

Concrete Controls Corp.

Concrete Products

Concrete Publishing Corp.

Concrete Transport Mixer Co.

Construction Machinery Co.

Continental Motors Corp.

Contractors & Engineers

Cook Bros. Equipment Co.

Crane Carrier Corp.

Cross Perforated Metals Plant

Cummins Engine Co., Inc.

Frank D. Davis Co.

Deister Machine Co.

Detroit Diesel Engine Div. General Motors Corp.

The Detroit Edison Co.

Dewey & Almy Chemical Co.

Diamond Iron Works Div. Goodman Manufacturing Co.

Diamond T Motor Truck Co.

Dodge Div. Chrysler Corp.

Dodge Manufacturing Corp.

Eagle Crusher Co., Inc.

Eagle Iron Works

Engineered Equipment, Inc.

Engineering News-Record

Erie Strayer Co.

Euclid Division General Motors Corp.

Fleet Sales Department Ford Division of Ford Motor Co.

Flexible Steel Lacing Co.

Food Machinery & Chemical Corp., Florida Div.

Ford Motor Co. Tractor & Implement Div.

Forrer's Div. of Spray-O-Bond Co.

Fruehauf Trailer Co.

FWD Corporation

General Electric Co. Communications Products Department

Gilson Screen Co.

GMC Truck & Coach Div. General Motors Corp.

Gruendler Crusher & Pulverizer Co.

Walter N. Handy Co., Inc.

Hardinge Company, Inc.

Hardy Scales Co.

Harnischfeger Corp.

HarriSteel Products Co.

The Heltzel Steel Form & Iron Company

Hendrick Manufacturing Co.

Hendrix Manufacturing Company, Inc.

Hercules Galion Products, Inc.

Hewitt-Robins Inc.

The Frank G. Hough Co.

The Howe Scale Co.

Hoyt Wire Cloth Co.

Hydro Dredge Accessory Co.

International Harvester Co.

Iowa Manufacturing Co.

The Jaeger Machine Co.

Johns-Manville Corp. — Celite Division

The C. S. Johnson Co.

Kensington Steel Co.

King Mfg. Corp.

Koehring Company

Leschen Wire Rope Div. H. K. Porter Co., Inc.

Link-Belt Company

Link-Belt Speeder Corp.

Littleford Bros., Inc.

Ludlow-Saylor Wire Cloth Company

Mack Trucks, Inc.

Manganese Steel Forge Co.

Manitowoc Engineering Corporation

E. F. Marsh Engineering Co.

Martin Engineering Co.

Massey-Ferguson Industrial Division

The Master Builders Co.

McLanahan & Stone Corp.

McNeil Brothers, Inc.

W. R. Meadows, Inc.

Meckum Engineering, Inc.

Modern Concrete

Monarch Road Machinery Company

Morris Machine Works

Motorola Communications & Electronics, Inc.

Murphy Diesel Co.

National Conveyor & Supply Co.

Noble Company

Nordberg Manufacturing Company

Northwest Engineering Co.

Oshkosh Motor Truck, Inc.

The Owen Bucket Co.

Pettibone Mulliken Corp.

Pick Manufacturing Co.

Pioneer Engineering Div. of Poor & Co., Inc.

Pit and Quarry

Plant City Steel Corp.

Productive Equipment Corp.

Radio Corporation of America

Reo Division of The White Motor Co.

Richmond Screw Anchor Company, Inc.

Rock Products

Rogers Iron Works Co.

Ross Porta-Plant

S & M Manufacturing Co.

Sauerman Bros., Inc.

Screen Equipment Co., Inc.

Servicised Products Corp.

R. H. Sheppard Co., Inc.

Sika Chemical Corp.

Simplicity Engineering Co.

A. O. Smith Corp. Permaglas Div.

The T. L. Smith Co.

Smith Engineering Works

Soiltest, Inc.

The Solvay Process Div. Allied Chemical Corp.

R. L. Spillman Co.

Stedman Foundry & Machine Co., Inc.

Stephens-Adamson Manufacturing Co.

Symons Clamp & Manufacturing Co.

Taylor-Wharton Co.

The Thew Shovel Co.

The W. S. Tyler Co.

Union Wire Rope Corp.

The Universal Engineering Corporation

Harry Warde & Co., Inc.

The S. K. Wellman Co.

Werco Steel Co.

Western Machinery Co.

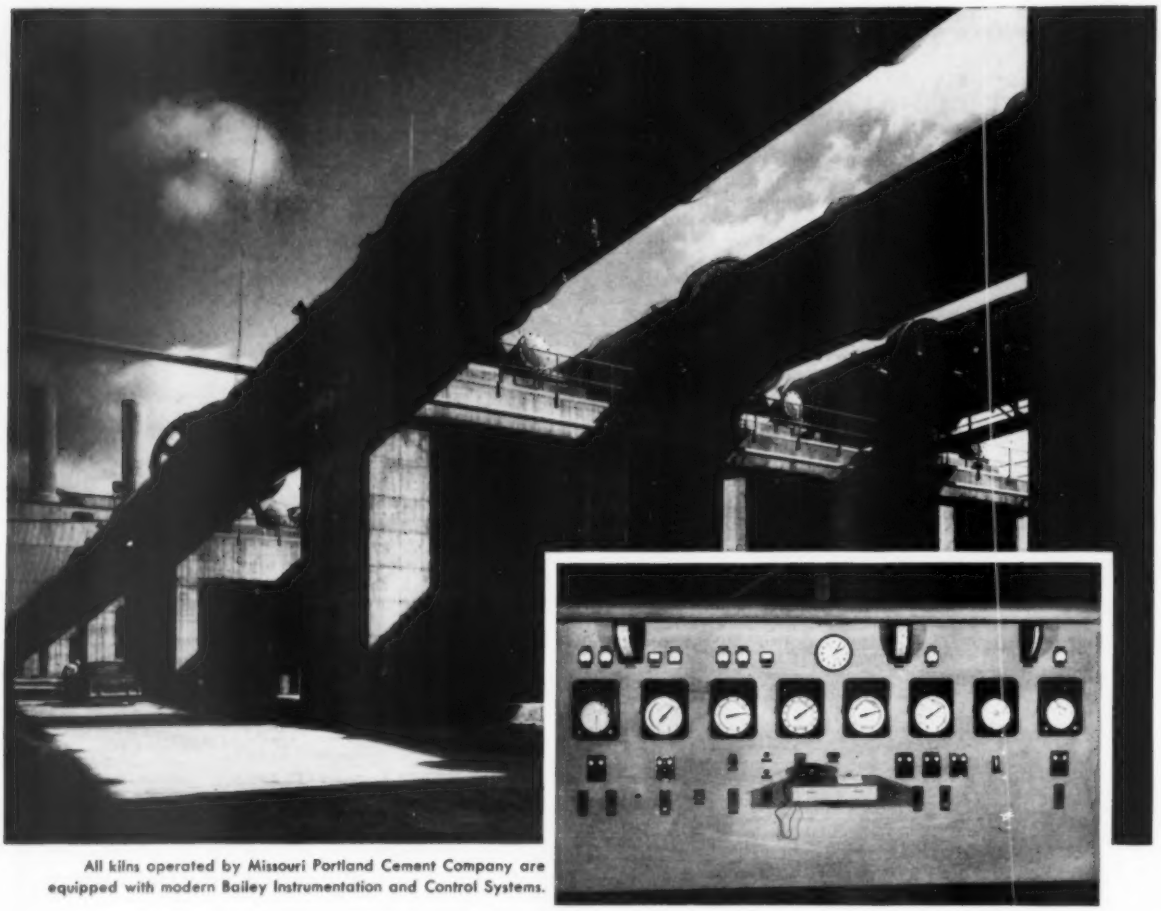
The White Motor Co.

Whiteman Manufacturing Company

Willard Concrete Machinery Company, Inc.

Worthington Corporation

The Yale & Towne Manufacturing Co. Trojan Division



All kilns operated by Missouri Portland Cement Company are equipped with modern Bailey Instrumentation and Control Systems.

How to control the digestion of giant kilns

These giant kilns have delicate stomachs. But the Missouri Portland Cement Company knows how to coddle them to get maximum capacity, uniform product and low fuel rate.

They do it with a Bailey Control System with a central Control Panel where a single attendant has complete control of the variables of combustion and heating.

Because the system keeps continuous chart records, the Burner can check the reading and trend of Kiln Speed, Exit Gas Temperature, % Oxygen in Exit Gas, % Combustibles in Exit Gas, Kiln Shell Temperature, Hood Draft, Temperature of Secondary Air Leaving Cooler, Temperature of Coal-Air Mixture from Coal Mill, Fuel Gas Flow, Feed End Draft, Kiln Speed, Cooler Speed, Cooler Fan Discharge Pressure, Cooler Undergrate Pressure, Cooler Air Flow, Coal Mill Primary Air Pressure, Coal Mill Exhauster Fan Suction, and Fuel Gas Flow.

The system works so dependably that week-long kiln runs have been made without the operator touching anything.

Let a Bailey Engineer help you plan for peak performance! For additional information write for a Bailey Kiln Control Folder. C-14

BAILEY METERS

BAILEY METER COMPANY

1051 IVANHOE ROAD • CLEVELAND 10, OHIO

In Canada—Bailey Meter Company Limited, Montreal

Advertising rate per issue:

$10.50 per column inch. Lower rates for larger space used and/or on a contract basis.

Write for rate card.

Closing date:

20th of month preceding date of publication.

Used equipment, employment and professional ads only are eligible for classified advertising rates.

PIT & QUARRY

431 S. Dearborn St. Chicago 5, Ill.

BROADCAST

Section

MECHANICAL ENGINEER

With strong background in bulk material handling, engineering and sales—sand and gravel, coal, bulk chemical, cement plant experience desired—plant layout and machinery design—sales experience helpful—prefer man under 45 years—write giving age, experience and salary expectations to

Box No. PQ-303-A, c/o Pit & Quarry Publications
431 So. Dearborn St. Chicago 5, Illinois

IMAGINATIVE ENGINEER

Eastern manufacturer has an interesting opportunity for an engineer as assistant to Director of Development Engineering. Projects will consist of developing and testing new types of crushing and allied machinery. Forward resume including educational and employment backgrounds. Our staff knows of this opening. Replies confidential.

Box No. PQ-304-A, c/o Pit and Quarry Publications
431 So. Dearborn St. Chicago 5, Illinois

PLANT ENGINEER WANTED

Multi plant cement company needs engineer. Opportunity for training and advancement. Give full details on background. Replies confidential.

Box No. PQ-281-F, c/o Pit & Quarry Publications
431 So. Dearborn St. Chicago 5, Illinois

WANTED: SUPERINTENDENT

For Crushed Stone Plane and Blacktop Plant. Write full information to

COUNTY LINE STONE CO., INC.
AKRON, N. Y.

ATTACHMENTS AVAILABLE

Northwest - Bucyrus Erie - Lima - Marion - Link Belt - Lorain - P&H - Manitowoc - Shovels - Backhoes - Clam Drag - all sizes.

James C. French

226 Berry Pkwy. - TAlcott 3-4927
P. O. Box 188 - Park Ridge, Illinois

OPERATING EXECUTIVE

A medium sized Midwestern crushing, rock, and gravel equipment, mining equipment and gray iron castings company is in need of a capable, middle aged or older operating executive. This opening has been occasioned by the recent death of one of its executives.

Company is 62 years old and during the past 10 years has been in the process of adding to, and building up its lines of manufacturing along with many improvements in plant and equipment.

Box No. PQ-306-A, c/o Pit and Quarry Publications
431 So. Dearborn St. Chicago 5, Illinois

DISTRICT SALES ENGINEER

(St. Louis, Missouri)

Prominent manufacturer of crusher and process machinery has challenging position for Sales and Service Representative with excellent opportunity for advancement. Must have minimum of 5 years heavy machinery sales experience in mining, crushed stone, sand and gravel, or cement industries. Prefer technical background in Mechanical, Metallurgical, or Mining Engineering.

Write stating age, education, experience, present employment and salary requirements. Replies strictly confidential.

Box No. PQ-305-A, c/o Pit and Quarry Publications
431 So. Dearborn St. Chicago 5, Illinois

PROFESSIONAL SECTION ON PAGE 260

ASPHALT PLANT SUPERINTENDENT

By company operating numerous plants within 25 mile radius of Rochester, N.Y. Fully qualified and experienced—assume complete responsibility for one or more plants as in operation, maintenance, mixes, etc. Man selected will function as assistant to executive handling entire operation. Year round employment. This is an opportunity with a future.

ASPHALTIC CONCRETE, INC.
P. O. Box 1850 Rochester, N. Y.
Phone: John J. Petrossi - Idlewood 6-8040

DUNDEE CEMENT REQUIRES MAINTENANCE SUPERINTENDENT

To be responsible for planning, supervision and recording of all maintenance.

Applicants in their mid-thirties with engineering background and with maintenance experience in cement or related industries will be given preference.

Applications must be hand-written and are to present personal, educational and employment backgrounds.

Write Plant Manager,

P. O. BOX 317
DUNDEE, MICHIGAN

LIQUIDATION

ALPHA PORTLAND CEMENT CO.
MANHEIM, W. VA.

1—Vulcan 9'x100'x⅝" Rotary Kiln
6—Vulcan 6'6"x60'x½" Rotary Kilns
1 Ruggles-Coles 5'x28'x⅜" Dryer
2—Mosser 4'x47'x5/16" Rotary Dryers
1—Traylor 8'x11' Steel Lined Ball Mill
2—Beth. Fdy. 7'x24' Compeb Mills, three Compartment
2—Beth. Fdy. 5'x22' Tube Mills
3—Allis-Chalmers 6K; 8K Gyratorys
1—Non-clog 36"x50" Hammermill
10—Fuller Lehigh 42" Pulverizers
1—West. 750 KW Turbo Generator Set

STOCK ITEMS

5'x45' Standard Rotary Dryer
6'x25'; 6'x50' Louisville Rotary Dryers
7'x50'; 8'8"x70' Ruggles-Coles Dryers
15"x8" to 24"x18" Jeffrey Hammermills
535'—24" Troughing Conveyor
Bucket Elevators 45' to 90' centers
BOILERS. COMPRESSORS. GENERATORS

WRITE—WIRE—PHONE

HEAT & POWER CO. INC.
ROCK PROD. EQPT. DIV.
60 E. 42 St. New York 17, N.Y.
MU 7-5280

FOR SALE
VERY LOW PRICE

Steel Forms for Tunnel or Culvert
Manufactured by Blaw-Knox Company
2 Collapsible inside forms 40' long x 30' wide x 15' high, curved top, for single tube
4 Exterior forms 40' long x 16' high
4 Collapsible inside forms 40' long x 30' wide x 15' high, curved top, for twin tube
2 Exterior forms 40' long x 16' high
Also steel forms for air duct and walkway
4 All Steel Trusses 110' long x 12' high Capacity: 40 Tons Moving Load on Each Truss

All Located at New Orleans, Louisiana

Contact J. S. Glazer

c/o Glazer Steel Corporation
1556 Tchoupitoulas Street
New Orleans, Louisiana
Telephone: Express 2761

(New)
GENUINE INGERSOL RAND ROCK BITS
1/3 Reg. Price

Types 1 & 2 Thread.
Side Hole & Center Hole.
Sizes 1½", 1⅝, 1¾, 1⅞, 2, 2⅛, 2¼, 2⅜, 2½.
Lots of 50 or more 20c each up to 2"
LOTS of 50 or more 25c each up to 2½"

Additional discount 10% on 500 or more, 20% on 1000 or more.

Exceptional Value—Stock up now, while Supply Lasts
WENZEL MACHY. CO., 565 S. 10th
KANSAS CITY, KANS. MAYFAIR 11710

HEAVY EXCAVATION EQUIPMENT

DRAGLINES, SHOVELS, CRANES, DRILLS, TRUCKS

15-W B.E. Elec. Drag. 215', 12 yd.
450-W B.E. Diesel Drag. 165' with extra 10, 12, 13 and 14 yd. buckets.
9-W B.E. Elec. Drag. 165', 10 yd.
9-W B.E. Diesel Drag. 165', 12 yd.
7-W B.E. Diesel Drag. 140', 7 yd.
7400 Marion Diesel Drag. 175', 13 yd.
625 Page Diesel Drag. 150', 10 yd.
621-S Page Diesel Drag. 125', 7 yd.
200-W B.E. Diesel Drag. 125', 6 yd.
5-W B.E. Diesel Drag. 100', 6 yd.
2400 Lima Dragline, 130', 5 yd.
4500 Manitowoc Drag. 120', 5 yd.
120-B B.E. Elec. Drag. 115', 5 yd.
111-M Marion Drag. 100', 4 yd.
1601 Lima 4 yd. Shovel/Drag
3900, 4500 & 3000 Manitowoc Cranes
5560 Marion 26 Yd. Elec. Shovel
5480 Marion 18 Yd. Elec. H.L. Shovel
151-M Marion 7 Yd. Elec. Shovel
170-B B.E. 6½ Yd. Elec. Shovel
4161 Marion 6 Yd. Elec. Shovel
2400 Lima 4½ and 5½ Yd. H.L. Shovels
120-B B.E. 4 Yd. Elec. Shovel
4500 Manitowoc 5 Yd. H.L. Shovel
1201 Lima 3½ Yd. Standard Shovel
111-M Marion Standard & H.L. Shovels
3500 Manitowoc Standard & H.L. Shovels
54-B B.E. Standard & H.L. Shovels
Model T-650 REICHdrill, Truck Mounted Rotary and Down-The-Hole
Ingersoll-Rand Truck Mounted Drillmaster
Joy Truck Mounted Rotary Air Drill, 6" holes
McCarthy & Compton Coal Auger Drills
Euclid Trucks, Truck Cranes, Dozers, Attachments

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l Bank Bldg.
Hazleton, Pa. GLadstone 5-3658

FOR SALE OR RENT

Large building with aggregate bins, boiler, bulk cement bins in place. Small down payment, balance like rent. Ideal for precast or block business, town of 50,000. One block company. No precast business in town.

Box No. PQ-252-K, c/o Pit and Quarry Publications
431 So. Dearborn St. Chicago 5, Ill.

Farrell-Bacon Jaw Crusher 24" x 13" x 14" (No. 14) $1,500.00
2½" Reliance Jaw Crusher 15" x 30", No. 4755, with International Diesel Engine Mounted on Open Flatbed Trailer $3,500.00

TACONIC EQUIPMENT CORP.
50 Haarlem Avenue White Plains, N. Y.
Tel. WHite Plains 9-2110

---

14 x 24 Reliance Jaw Rebuilt
Erie Car Unloader
25½ Kennedy Gry. Rebuilt
Erie Concrete Plant. 3 Yrs. Old. Ex. Cond.
100 Yd. per hr. Plant

LOCKE EQUIP. CO. INC.
FE 1-6201 or FE 1-6390 Box 212 R. Sta.
Kingston, New York

WANTED

F-55 Syntron Feeder Grizzly Type
Selenium Rectifier Controls

William E. Dailey, Inc.
North Bennington, Vermont

Assayers
Consultants
Designers

Professional Services

Engineers
Geologists
Technicians

CORE DRILLING
Quarry & Mine Exploration

ERECO
DIAMOND CORE DRILLING COMPANY

Thomasville Pennsylvania

E. E. Cooke, Proprietor
Telephone: YORK, PA. 7305 or 5881

CORE DRILLING

MINERALS CLAYS LIMESTONE
FOUNDATION TESTING
BUILDINGS HIGHWAYS

THOMASVILLE DRILLING & TESTING CO.
THOMASVILLE, PENNA.

WISSER AND COX
APPLIED GEOLOGY
FOR
UNDERGROUND & QUARRY PROBLEMS
exploration - evaluation

55 New Montgomery, YUkon 2-1436 — San Francisco, California, cables: GEOLOG

We do
CONTRACT DRILLING
Anywhere

SPECIALIZING IN QUARRY BLAST HOLES USING
INGERSOLL-RAND DRILLMASTERS
Hole sizes from 4¾" through 6½"

NEW JERSEY DRILLING COMPANY
Box 251, Route 206, Netcong, N. J.
NEtcong 3-2250

Quarries
Crushing Plants
Cement Plants
Storage Methods
Operating Costs

E. Lee Heidenreich, Jr.
Consulting Engineers

75 Second St.
Newburgh, N. Y.
JO 1-1828 (Code 914)

Construction
Design
Operation
Plant Layout
Appraisals

CORE DRILLING
ANYWHERE
We look into the earth
PENNSYLVANIA
DRILLING COMPANY
PITTSBURGH 22, PA.

Machinery Center Inc.'s

MACHINERY SPECTACULAR

Round Mountain Gold Dredging Corp. Plant — Round Mountain, Nevada

1—Brush, belt, 42", SA, (New)
1—Bowl, Knudsen
2—Boiler, Economic, 60 HP oil fired, with blowers, condensate pumps, tanks, etc.
1—Ball Mill 2 tons, New
1—Barrel, Amalgamation, 24" x 48"

7,000 Feet of belt conveyors
1,356 Feet of new belt
Large lot of spare parts

1—Conveyor, 60" x 150' center to center belt, with steel framework, 100 HP gearmotor
1—Conveyor, 42" x 1250' center to center belt, with steel framework, two 100 HP gearmotors
1—Conveyor, 42" x 625' center to center belt, with steel framework, stacking tower, 200 HP motor and speed reducer
1—Conveyor, 36" x 225' center to center belt, 100 HP gearmotor, variable speed drive
1—Conveyor, 36" x 500' center to center belt, 100 HP motor & speed reducer
1—Conveyor, 36" x 645' center to center belt, two 100 HP motors & reducers
1—Conveyor, 42" x 870' center to center, trailing belt type with movable stacker & 36" x 70' center to center stacking conveyor. One 100 HP gearmotor, two 20 HP motors & reducers
1—Conveyor, 36" x 50' belt conveyor with 20 HP motor, steel frames
3—Conveyors, 36" x 50' belt conveyor with 7½ HP gearmotors, steel frames
1—Conveyor, 1800' complete, 42", (Less Belt)

1 Lot—Conveyor parts, including 42" conveyor tables, 60" troughing idlers, head & tail pulleys, 42" troughing idlers, 42" return idlers, 36" troughing idlers, 36" return idlers. Tremendous stock, write for complete inventory

1356'—Conveyor, 42" Belting, 5 ply, new
1—Classifier, Dorr Duplex, Rake, 5' x 23', DFSX, with 5 HP motor
1—Compressor, IR type 40, with 50 HP motor
1—Crusher, Braun Chipmunk, with 2HP motor, 2¼" x 3"
1—Crusher, Braun Chipmunk, less motor, 2¼" x 3"
1—Crusher, 36" x 42" Birdsboro-Buchanan Jaw with 100 HP motor & starter
1—Feeder, reciprocating plate feeder, SA, 3' x 6'
1—Feeder, belt, ore, Deco, 12" x 2' x 6"
1—Feeder, Pan, Jeffery No. 5
1—Furnace, DFC, double muffle assay, with blower
1—Furnace, gold melting
1—Filter, Deco pressure, 12" x 12"
3—Gates, chute, hydraulic operated
1—Gate, lifting device, electrified, on thickener overflow
1—Generator set, 50 KW, Cat. diesel, (like new)
1—Generator, 2 KVA, Koehler light plant
1—Hopper, Truck Dump complete belt loading facility with grizzley & Bin, Hydraulically operated, with ConveyCo reciprocating plate feeder, 10 HP gearmotor
1—Hoist, Monorail, lift, P & H, 1 ton, Electric
1—Hoist, Monorail, lift, 2 HP
1—Hoist, Wright lift, 3 HP, Electric
1—Hoist, Electric lift, ½ HP
3—Hoists, Budgit, Electric ½ Ton
1—Hydroseparator, 36' x 10' Process Engineers, Steel tank
2—Hydroseparator, 24' x 8' Process Engineers with Steel tank and 7½ HP Vangearmotor
14—Jigs, Yuba, 4 cell, 42" x 42", Model M-8, with gearmotors

Stacking Tower for 42" Conveyor

1—Jig, Yuba, 2 cell, 42" x 42", Model M-8, with gearmotor
4—Motor, gearmotor—100 HP Westinghouse
1—Mill, Marcy Ball, 5' x 10', with 100 HP motor & controls
1—Mill, Laboratory Ball, 14" x 14" x 24", with 2 HP motor
1—Mill, Laboratory Ball, 12" x 18" with motor & drive
1—Magnet, head pulley, Dings, 16"
15—Tons Rail, 40-50 lbs.

All Sizes Piping, Valves

1—Pump, viking oil, with motor
2—Pump, sump, Cascade, with 30 HP motors
2—Pump, sand, NLOR, A.C., 6 inch, with 30 HP motors
2—Pump, Yuba, water pump, 14", with 125 HP motor and controls
1—Pump, sand, NLOR, A.C., 6 inch, less motor
5—Pumps, diaphram, Dorrco duplex, 6", with motors
2—Pumps, diaphram, Dorrco duplex, 8", with motors
1—Pump, Yuba, water pump, 10" (bare)
1—Pump, Worthington, Centrifugal, 10 HP
1—Pump, Fairbanks Morse, Booster pump, 300 HP motor
1—Pump, Fairbanks Morse, Booster pump, 200 HP motor
1—Pump, Fairbanks Morse, motor pump, 20 HP motor
2—Pumps, Byron Jackson, motor pump, one 15 HP, one 25 HP
1—Pump, Wintroath Deepwell pump, 100 HP motor
1—Pump, Worthington, Deepwell pump, 100 HP motor, with special slip clutch
1—Pump, Byron Jackson, Deepwell pump, 30 HP with bowl assay
2—Pulverizers, Braun motorized, 2 HP motor
1—Pan, Bendan Pan to grind Amalgam, 2 HP motor
4—Sand dewatering wheels, ConveyCo, w/ drives
1—Stacker, stockpiling 30" x 60' Stacker Conveyor
1—Speed reducer, for 100 HP motor
1—Screen, Trommel, 24" x 6'
1—Screen, Trommel, 9' x 54'-6" with 100 HP slip ring motor, steel screen sections
4—Screens, 4' x 12' Tyler Ty-Rock, F-600 Single deck 10 HP motors
1—Shot, separator, with belt feeder, hopper, magnetic head pulley
2—Splitters, sample
1—Scale, warehouse platform, 1000 lbs.
1—Scale, gold balance, 1/500 mg. Heusser
1—Scale, Ainsworth balance, Analytical
6 Tons—Shot, jig
1—Receiver, vertical air, 4' x 7'

Tools, Shop Equipment

1—Threader, pipe and bolt, 2" Reliance, with gearmotor
1—Grinder, pedestal, 12", 3 HP motor
1—Welder, portable, gasoline, 300 amp
1—Welder, portable, gasoline, 300 amp
2—Welder, 300-400 amp Lincoln shield ARC, DC
2—Welder, 200 amp, General Elec., D. C.
1—Acetylene generator, 50# capacity
1—Lathe, LeBlonde, 28" swing, like new
1—Shaper, 20" Cincinnati
1—Drill press, upright
1—Grinder, bench, 10", 220/440V
1—Automotive valve grinder
1—Threader, pipe, 4" cap., 3 HP motor
1—Air compressor, DeVilbiss, ¼ HP, 115V, Motor
1—Air compressor, portable, LeRoi-Rix, 50 HP slip ring elec. motor
1—Air compressor, Quincy, 20 HP motor
1—Vulcanizer, 42" belt
1—Vulcanizer, patcher, 12" x 14", Heintz
1—Cement mixer, Jaeger, 10S, no.-tilt
1—Lot misc. portable tools, drills, etc.
1—Thickener, Dorr traction type, 250' dia., x 14'-4½", Type MC concrete tank, 7½ HP drive —
2—Tables, small Wilfley, Laboratory

68—Transformers, 3KVA to 833 KVA variout switch gear

2—Transformers, 833 KVA, 55000 volt primary to 2400/4160Y, with complete substation equipment
3—Transformers, 250 KVA, 2400 volt to 480 volt, 1 ph 60 cycle, (mill sub-station)
1—Transformer, 150 KVA, 3 phase 2400 to 240/480 volt, with switch gear
3—Transformers, 250 KVA, 2400 volt to 240/480V, 1 ph, 60 cycle with substation switch gear
24—Transformers, 75 KVA, with switchgear, 2400 to 240/480V
16—Transformers, 37/ KVA, with switchgear, 2400V to 240/480V
1—Transformer, 25 KVA, 2400 to 120/240V, with switchgear
8—Transformers, 15 KVA, 2400 to 120/240V, switchgear
2—Transformers, 5 KVA, 2400 to 120/240V
7—Transformers, 3 KVA, 2400 to 120/240V
1—Tank, water storage, 16' x 16'
1—Weightometer, Merrick, for 36" belt

Over 250,000 Feet of Wire & Cable

1000'—Wire, no. 4 & 6 cable for power shovels
18—reels wire, misc. sizes, elec. cable
4—miles wire, power line, aluminum wire
18—miles wire, power line, 55,000 volt, copper conductors
4-5—miles wire, power line (servicing camp)

Rolling Stock, Shovels, Slushers, Etc.

1—I/R Slusher Hoist, 3 drum, 30 MNM3C, electric driven
1—Shovel, 170 B, Elec. 7 yd. Bucyrus Erie
1—Shovel 54B, Diesel, 3 yd. Bucyrus Erie
1—Dragline, 54B, Diesel, Bucyrus Erie, 2½ yd.
1—Dragline, 111 Marion, with shovel attachments, 3½ yd.
1—Scraper-Loader, 8-10 yd.
1—D-8 Cat., with Hyster loader, 2 U series
1—D-8 Cat., with Dozer Blade
1—Winch, Hyster, logging, for D-8
2—Trucks, Jeep
1—Truck, pickup, Chevrolet
1—Truck, flat bed
1—Truck, fuel

For Complete Listing, Price, Etc.

Phone **Wire** **Write**

MACHINERY CENTER, INC.

1201 South 6th West **P.O. Box 964, Salt Lake City 10, Utah** **Tel.: HUnter 4-7601**

KILNS-DRYERS

10' x 234' long Kiln, ¾" shell
8'8" x 70' Hardinge Dryers, ⅝" shell
11' x 175' Traylor Kiln, ¾" shell
10' x 78' Dryer, ¾" shell
8' x 115' United Kiln, ½" shell
7'6" x 100' Kiln, ½" shell
7'6" x 60' Dryer, ½" welded shell
7' x 50' Allis Dryer, ⅝" shell
6' x 7' x 100' Kiln, ½" shell
6' x 30' Louisville Dryers
5'6" x 31', 4'8" x 33', ½" shell, Dryers

1—Kennedy 7' x 9' continuous ball mill, integral herringbone gear. 150 HP. 1948. LIKE NEW!

MILLS

BALL, Kennedy 7' x 9', 150 HP
ROD, Marcy 8' x 12', 350 HP
ROD, Kennedy 4' x 8', 50 HP, EPD
ROD, Marcy 7' x 15', 4" Liners, 300 HP
CONICAL, Hardinge 8' x 36"
CONICAL, Hardinge 4' x 16"
BALL-TUBE, Allis-Ch. 6' x 16'
BALL, Kennedy 4' x 8', 50 HP, EPD

SPECIAL

4—Allis-Chalmers 5' x 22' ball tube mills, complete with 150 HP motors & drives.

CRUSHERS-PULVERIZERS

GYRATORY, Allis #322, 3", 30 HP
GYRATORY, Kennedy #49S, 12", 100 HP
JAW, 18" x 9", 20" x 6', 36" x 15"
ROLLER, Raymond, 66", 6-roll, 200 HP
PULV., B & W Type E-32, 75 HP
SAWTOOTH, Robinson #13, 36", 15 HP
DBL. ROLL, Allis 30" x 14", 25 HP

SPECIAL

Kennedy #49S gyratory crusher, 100 HP, 12" feed.

PERRY EQUIPMENT CORPORATION
1414 N. Sixth St. Phila. 22, Pa.
POplar 3-3505

WIRE US COLLECT!

4-OLIVER FILTERS

8' x 14' Rotary continuous vacuum Filters. Closed steel panel drums. Rocker agitated troughs. Late style. Excellent condition.

MUST MOVE

Wire or phone collect—GA 1-1380

MACHINERY AND EQUIPMENT CO.
123 Townsend St. · San Francisco 7, Calif.

MOTORS AND GENERATORS

All sizes, new and rebuilt. Starters, accessories, pulleys and repair parts. Gear motors, Falk Shaft mounted Speed Reducers, couplings and V-belt drives.

EXPERT REPAIR SERVICE
NUSSBAUM ELECTRIC CO.
220 E. Douglas Avenue Fort Wayne, Ind.

FOR SALE

1 model 621 Page walking dragline machine presently working and in good operating condition. Available with either a 150' boom and a 5 yard Page AUTOMATIC dragline bucket or a 135' boom and a 6 yard Page AUTOMATIC dragline bucket. This machine can be delivered immediately and is ideal for sand and gravel work.

Phone POrtsmouth 7-9300
Chicago, Illinois

FOR SALE OR RENT — EASY TERMS

Rebuilt — A-1 Condition
48B Bucyrus Erie Shovel, 2 cy Diesel
Northwest Model 6 Shovel, 1½ cy.
Caterpillar D8 Bulldozer

WILLIAMS CONSTRUCTION COMPANY
Box 5045, Balto 20, Md. Murdock 6-1800

WANTED

For Manitowoc Model 4500 Dragline, 42' Steel Top Boom Section. Part Number 50068. Quote Price.

Interstate Sand & Gravel Co., Inc.
Box 66 Covington, Indiana

For

Best Results

Advertise in

PIT and QUARRY'S

Broadcast Section

●

"The Marketplace of the Industry"

CEDARAPIDS Two Unit Portable Plant, 1824 Jaw, feeder, conveyor, mounted tandem axles, power. Secondary 1624 rb. Double Roll, 3x8 screen rotovator, delivery conveyors, power, tandem axles, pneumatic tires. Unused. Cost Gov't. appr. $45,000. Our Price $19,750. Raleigh, North Carolina Rental Purchase.
UNIVERSAL 1824 rb. Jaw Portable Primary w/apron feeder, diesel power, conveyor, tandem rubber. Excellent. $8500 Yard.
CEDARAPIDS Secondary Portable w/1624 double roll, 3x8 screen, rotovators, power, conveyors, tandem rbr., like new. 40% of new price. $10,500 Yd.
CEDARAPIDS 2225 Jaw Semi-Portable Primary Plant w/6' apron feeder, conveyor, power, all on steel skids. Excellent. $8500 Lawton, Okl.
GRUENDLER 2436 Jaw Semi-Portable Primary Plant w/12' apron feeder, conveyor, power on stel skids. Excellent. $15,000 Lawton, Okl.
CEDARAPIDS 2036 Jaw Portable Plant w/apron feeder, conveyor, Cat. diesel, conveyor, tandem rubber, excellent. $16,500
CEDARAPIDS Pitmaster Portable Plant w/1016 Jaw, feeder, 1616 rolls, 3x8 screen, rotovator, power, rubber. Good. $11,500 Yard.
PIONEER 305W Semi-Portable Washing & Screening Plant w/7x24 rotary scrubber-screen, 3 steel bins, 80' conveyor, sand drag, motors. Makes 5 sizes, 50 cy. hr. Excellent. $1,000 Wisc.
CEDARAPIDS 1836 Twin Jaw Crusher, exc. $6000
DIXIE 3650 Hammermill, good. $2750 Messina, N.Y.
SCREENS: Cedarapids 4x12 3-deck horizontal, excellent. $2500 Ohio. Telsmith 3-10 2-deck, rebuilt. $1250 Deister 3x8 2-deck Plat-O w/motor, like new. $1250 Yard.
GARD-DENVER WBK402 Comp., rblt. $2500 Yd.
DAVEY 210 cfm Diesel Portable Compressor on rubber, late model Super Chief, rebuilt. $2250 Rental $200/mo. apply purchase.
SHOVEL FRONTS for Lima 34, new, $1250. P&H 255A, good, complete w/deck machy. $1500 Unit 1020, new, $1250. P&H 655B, new, complete. $4500 Yard.
ROCK BITS, SAVE 75%. Brand new, Ingersol Rand, Types 1&2, side hole and center hole. Sizes 1¼" to 2¾". Price 20c to 25c.
WRECKING BALLS, 6000#, new. $385 Yard.
JAW DIES for **PIONEER** 3042, new. $450 ea. Yd.

WENZEL MACHY. CO.
565 S. 10th Kansas City, Kans.
Mayfair 1-1710

For Sale

2—Rotary dryers, 6' x 36', ½" material

1—Traylor 4' x 40' rotary dryer

1—Link Belt roto louver dryer, Model 1003-30

Box No. PQ-224-H, c/o Pit & Quarry Publications
431 So. Dearborn St., Chicago 5, Ill.

FOR SALE

1—12" x 36" Type B Farrel-Bacon Crusher
1—#1030 Good Roads Portable Crushing Plant—96 H.P. Diesel Engine, Screen & Elevator
1—Worthington 6" Superior McCully Fine Crusher
1—Apron Feeder 36" x 16'-0"
2—Link-Belt Vibrating Screens, Type NP-315
1—Link-Belt 3' x 5' Foundry Shakeout Screen—New
1—Syntron F-200 Vibrator
1—Link-Belt Slope Hoist, 48" x 48" Drum, Roller Bearings, Gear Reducer
1—3½ Yd. Clamshell Bucket—Blaw-Knox, Size 734
1—24" x 14" Allis-Chalmers Type B Crushing Rolls
1—3' x 8" Hardinge Rod Mill with Spare Liners
1—36" x 20' Revolving Screen
1—36" x 11' Revolving Screen
1—30" x 14' Revolving Screen
New All-Steel & Manganese J. & H. Hammermills 5½" x 18"
1—5' x 18" Hardinge Conical Ball Mill—New Gear
We build open and totally enclosed bucket elevators and belt conveyors to suit your needs.
Large stock chain, sprockets, buckets and conveyor pulleys—new and used.

JOHNSON & HOEHLER, INC.
P. O. Box 152 Lansdowne, Pa.

3—10' x 78' Dryers—3684 Jaw Crusher
30" Merrick Weightometer—36" S.A. Feeder 100' Long. 48" x 120' Feeder Conveyor—Syntron Screen Conv. 24" x 31' Syntron F86 Feeder—6' to 14' Vibrating Feeders 60" x 300' & 150' Conv. 3620 Dixie Nonclog Moving plate Hammermills—Asphalt Plants—Hydrated Lime Plant. 2'3'4' Symons & Telsmith Cones, 66FC Tel. Cone Port. 24" x 25' Eagle—sgl. Fine Screw, others. Jaws—Cones—Gyratory—Rolls dbl. & Triple—Hammermills & Impactor Crushers. Ball-Rod-Tube Mills—Screening-Washing & Crushing Plants. Classifiers—Compressors—Conveyors, Cranes—Drills—Dump Cars—Dredges—Feeders — Hoists — Motors — Generators — Kilns — Dryers — Locomotives — Pumps — Screens — Shovels — Draglines — Transformers — Euclid Trucks. Equipment List sent on request.

STANLEY B. TROYER EQUIPMENT COMPANY
Box 97 Phone 500 Crosby, Minnesota

FOR SALE
EUCLIDS
Rear, Bottom and Scrapers

15W	**Bucyrus-Erie** Dragline, 14 yd.
7W	**Bucyrus-Erie** Dragline, 7 yd.
7400	**Marion** Walking Dragline, 9 yd.
6½ yd.	**Bucyrus-Erie** Shovel
5 yd.	**Bucyrus-Erie** Shovel
2½ yd.	**Bucyrus-Erie** Shovel
9 yd.	**Bucyrus-Erie** Dragline
5 yd.	**Bucyrus-Erie** Dragline
2½ yd.	**Northwest** Shovel
3½ yd.	**P&H** Shovel
1½ yd.	**Marion** Shovel
6 yd.	**Lima** Dragline
3 yd.	**Lima** Dragline
2 yd.	**Lima** Shovel
5 yd.	**Manitowoc** Shovel
3 yd.	**Manitowoc** Dragline
2 yd.	**Lorain** Dragline
1 yd.	**Lorain** Backhoe

"Other equipment available not listed above"

WILLIAM LUBRECHT, III.
Construction Equipment
311 W. Diamond Ave. Hazleton, Pa.
Gladstone 5-4041 - 5-0253

Wanted—A good used 3 or 3½ ft. short-head Cone Crusher for reducing 1¼" size Quartzite to Silica Sand. Union Mining Co., 2306 First Natl. Bank Bldg., Pgh. 22, Pa.

NEW RAIL
20# — 30# — 40#
IN STOCK
LEFTON INDUSTRIAL CORP.
***GENERAL OFFICE:* 212 Victor St.**
St. Louis 4, Mo.

FOR SALE

All electric sand and gravel plant with D13000 power unit, washers, screen, feeder, conveyors, motors, price $18,500.00; LS85 Shovel diesel power; Lima Paymaster Shovel gasoline power; B4 Speeder Dragline cheap. Also would sell going business.

BLUE RIBBON SAND & GRAVEL CO.
Oakville, Iowa

For Sale From Stock

INTERMEDIATE GRADE
DEFORMED REINFORCING BARS

SIZES #3, #4, #5, #6, #7, #8, #10, and #11
40' and 60' LENGTHS

ALSO AVAILABLE

160 TONS NO. 1 RELAYING RAILS

located at
New Iberia, Louisiana

Contact:
J. S. GLAZER
GLAZER STEEL CORPORATION
1556 TCHOUPITOULAS ST.
NEW ORLEANS, LOUISIANA
Telephone: EXpress 2761

BONDED EQUIPMENT BARGAINS

WRITE, WIRE OR PHONE FOR FREE CATALOG AND PRICES

BONDED ® TROUGHING IDLER CONVEYOR BARGAINS

CONVEYOR PRICES INCLUDE BELTING

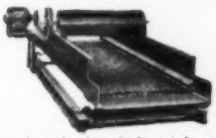
Complete Pre-Fab sections of 8" Jones & Laughlin Jr. I Beam Frame Conveyors quickly and easily joined together on the job. These beams are rolled with .20% Copper Content. Atmospheric exposure tests disclose that Junior Beams with .20% Copper have as much as four times the resistance to corrosion as non-copper steels. Braced with structural angle, welded to frame for maximum rigidity. Equipped with 5" roll diameter idlers and return rolls, 20" diameter head pulley and 16" diameter tail pulley, mounted on 2¼" or 2 7/16" diameter shaft.

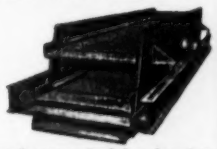
We take our loss on our stock of short length belting. You can save as much as 50% on BONDED CONVEYOR SPECIALS, with conveyor belting in two pieces. Belt is new 4-ply, 28 oz. duck, 1/16" top rubber cover x 1/32" bottom cover Major grade belt and is Fresh Stock made by leading manufacturers. **WRITE FOR BULLETIN #1138.**

Bonded troughing idler conveyors also available in Truss Frame Construction. **WRITE FOR BULLETIN #1169 AND PRICES.**

Belt Width	Length of Conveyor	List Price	Sale Price	Add or Deduct Per Foot
14"	25'	$1397	$ 738	
14"	50'	2222	1159	$16.84
14"	85'	3377	1748	
16"	20'	1262	667	
16"	45'	2137	1118	18.04
16"	60'	2662	1388	
16"	90'	3712	1930	
18"	25'	1477	787	
18"	45'	2217	1182	
18"	70'	3142	1665	19.24
18"	85'	3697	1952	
18"	100'	4252	2240	
18"	130'	5362	2817	
20"	25'	1517	835	
20"	60'	2882	1548	20.37
20"	75'	3467	1854	
20"	90'	4052	2159	
24"	25'	1590	898	
24"	45'	2430	1334	
24"	70'	3480	1878	21.78
24"	100'	4740	2532	
24"	120'	5580	2967	
24"	150'	6840	3621	
30"	50'	2911	1617	
30"	70'	3871	2112	24.75
30"	90'	4831	2607	
36"	25'	1818	1118	
36"	45'	2858	1677	27.95
36"	60'	3638	2096	
36"	100'	5718	3214	

BONDED ® GENERAL DUTY AND HEAVY DUTY VIBRATING SCREENS





For mineral, chemical and other industrial products. Fast, efficient and economical for cleaning, sizing, grading, dewatering. Made in all metals, including stainless steel. Enclosed models for hot materials or dust control. Bonded screens are built for any screening operation, wet or dry.

PERFECT BALANCE AND SHARP ACTION. Eccentric weight mechanism, spring mounted. 1 to 3 decks, 2' x 4' to 3' x 8'. **WRITE FOR "SEVEN SECRETS OF SUCCESSFUL SCREENING" IN BULLETIN NO. 1086.**

Model Number	Screening Area	No. of Decks	Sale Price
124A	2'x4'	1	$ 443
224A	2'x4'	2	472
126A	2'x6'	1	472
226A	2'x6'	2	501
134A	3'x4'	1	504
234A	3'x4'	2	570
136A	3'x6'	1	581
236A	3'x6'	2	688
336A	3'x6'	3	956
138A	3'x8'	1	675
238A	3'x8'	2	815
338A	3'x8'	3	996

FACTORY BALANCED, CONTROLLED VIBRATION. Four bearing positive throw eccentric shaft; 3' x 6' to 5' x 14', 1 to 5 decks. **WRITE FOR BULLETIN NO. 1087 AND 9 REASONS WHY BONDED IS YOUR BEST BUY.**

Model Number	Screening Area	No. of Decks	Sale Price
336B	3'x6'	3	$1620
436B	3'x6'	4	1685
138B	3'x8'	1	1510
238B	3'x8'	2	1620
338B	3'x8'	3	1735
248B	4'x8'	2	2310
348B	4'x8'	3	2440
2410B	4'x10'	2	2400
3410B	4'x10'	3	2550
2412B	4'x12'	2	2590
3412B	4'x12'	3	2970
4412B	4'x12'	4	3165

TESTED CONVEYOR BELTING*

WE PAY FREIGHT ON 200 POUNDS OR OVER PLUS AN ADDITIONAL 10% SAVINGS FROM SALE PRICE FOR FULL ROLLS 500 TO 650 FEET.

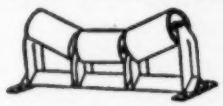
MAJOR BRAND. 12# to 15# AVERAGE FRICTION PULL. 800# to 1000# AVERAGE COVER TENSILE. Heavy Duty. 4-ply, 28 oz. duck. 1/8" top rubber cover x 1/32" bottom rubber cover. High tensile strength. Tough cotton duck. Strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily.

Width	Ply	List Price Per Foot	Sale Price Per Foot
14"	4	$3.78	$2.94
16"	4	4.24	3.09
18"	4	4.69	3.42
20"	4	5.17	3.95
24"	4	6.08	4.43
30"	4	7.47	5.42
36"	4	8.85	6.43

***All belting is tested by the Engineering laboratory of one of the largest universities in the United States. It is guaranteed to meet or exceed listed specifications.**

Other widths, piles, duck weights and cover thickness available at low prices.

BONDED® IDLERS & RETURN ROLLS
SAVE 25% AND MORE



3-roll, 5" diameter Troughing Idlers for:

14" belt	$19.75	24" belt	$22.75
16" belt	20.50	30" belt	23.85
18" belt	21.90	36" belt	24.90
20" belt	22.10	48" belt	27.50

1-roll, 5" diameter Return Rolls for:

14" belt	$ 8.50	24" belt	$11.00
16" belt	9.00	30" belt	12.50
18" belt	9.50	36" belt	13.75
20" belt	10.00	48" belt	16.50

All steel. Interchangeable with other well-known makes. Furnished with replaceable pre-lubricated sealed ball bearings. Maintenance is negligible. **WRITE FOR BULLETIN #1136.**

BONDED SCALE AND MACHINE COMPANY

Mfrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders
110 BELLVIEW, COLUMBUS 7, OHIO **Phones: HI 4-2186; AX 1-2213 Evenings.**

TITANIUM PLANT

1—Traylor 11' x 155' Rotary Kiln, 2 tires, welded, 7/8" shell.
1—Rennenberg 6' x 60' Rotary Kiln.
2—Abbe 5' x 16' Ball Mills.
3—Bucket Elevators; 125', 32', 30'.
2—Aurora 24" Vert. Cent. Pumps, 200 HP motors, 5000 gpm, 125' head.
1—Bemis Automatic Bag Packer, Sewing Machine, Conveyor and Flattener.
1—Deep Well Pump, 75 HP Vert. Motor.
1—8' x 8' Oliver Precoat Filter.
6—Dorr Thickener Mechanisms, 16'.
18—Steel Buildings 20' to 80' wide, x 60' to 140' long.
2—20 ton Overhead Cranes, 30' & 35' spans.
8—Redler Conveyors; 30', 35', 40', 75', 80' and 125' long.
200' Screw Conveyor, 9" and 12".

SEND FOR CIRCULAR

Representative on Premises

Broening Highway **Baltimore, Md.**
Tel: Medford 3-2911

BRILL EQUIPMENT COMPANY

35-65 Jabez Street
Newark 5, N. J.
Market 3-7420

CRUSHING PLANTS: Pioneer 1020, CR Commander AWSI Port. Univ. 2036 Staty.
CRUSHERS: 1016, 1036, 1220, 1536, 1832, 2036, 2436, 2540, 3042, 4860, 4872 JAW. 9K & 12K Gates. AC322K, 530R, 636, 848R, 4' Traylor. 28", 36", 16R, 25B Telsmith GYR. 2 & 3' Cones. 1842 sgl., 5424 dbl. ROLL.
DRYERS: 4x20, 5x28, 6x25, 6½x50, 8x70, 10x78.
COMPRESSORS: 750 CFM West staty. 600 CFM IR Gyrodo. 10 Joy 75 CFM. 2400 CFM PRE2.
FEEDERS: 3x8 AW, 3x10 Telsmith, 30" Merrick.
CRANES: WB2 Browning Wagon. 20, 30, 60 ton Bridge. Manitowoc 2000B. Lorain MC504W.
8'x48" Hardinge. Yuba 7x35' SCRUBBERS.
MILLS: Raymond 5047 Roll. Dixie 2424 non-clog 3630 & 3650 std. CR4033, CR3 Hammer.
CONVEYORS: 18"x30', 18"x178', 24"x100', 30"x83', 36"x250' Troughing. 24" & 36" Roller.
SHOVELS: Marion 92M, 111M. NW25, 6, 80, 95. Link Belt L850, Speeder B5. Lima 34, 604. P&H 1055. Koehring 304 & 1005. Lorain 41, 820.

MID-CONTINENT EQUIPMENT CO., INC.
6321 Gannon St. Louis 32, Mo. Wydown 1-2826

SHOVELS
DRAGLINES
EUCLIDS

2400 Lima 6½ yd. Shovel.
2400 Lima 6 yd. Dragline.
4500 Manitowoc 5 yd. Dragline.
54-B Bucyrus Erie 2½ yd. Dragline.
3500 Manitowoc 2½ yd. Dragline.
80-D Northwest 2½ yd. Shovel, 1956.
1007 Osgood 2½ yd. Dragline. $12,500
170-B Bucyrus Erie 6½ yd. Shovel.
120-B Bucyrus Erie 5 yd. Shovel.
4161 Marion 5 yd. Shovel.
38-B Bucyrus Erie 1½ yd. Shovel.
46TD Euclids, 22 ton, rear dump.
65TD Euclids, 27 ton, rear dump.
49FD Euclids, 15 ton, rear dump.
TS-24 Euclid Motor Scrapers.
175-A Michigan Front End Loader.
38-B Bucyrus Erie Shovel Attachment.

FRANK FAMALETTE EQUIPMENT COMPANY
P. O. Box 325 **Hazleton, Pa.**
GL 5-4708 — GL 5-4196

IDLE EQUIPMENT WASTES MONEY

Got an old crusher sitting around doing nothing? A kiln? A shovel? Why not convert that idle equipment into ready cash!

Pit and Quarry's Broadcast pages are read each month by thousands of men in the industry. Some of them are probably looking for exactly the machine you're no longer using and would like to sell.

A small ad costs you only $10.50, and we'll be glad to send you a rate card if you're interested in larger ads running more than once.

Just drop us a line.

THE BASIC MAGAZINE IN A BASIC INDUSTRY

PIT AND QUARRY *Publications*

431 S. DEARBORN ST., CHICAGO 5, ILL.

LIQUIDATING BRIQUETTE PLANTS

3—Ruggles-Coles Class #XA-18, double shell indirect-direct heat rotary dryers, 104" x 70' x 5/8" shell.
2—Komarek-Greaves, briquetting presses, 75 HP, 25 tons per hour.
4—Komarek-Greaves vertical Fluxers.
4—K-G Horiz. Fluxers 41" dia., 50 HP.
4—K-G Pug Mills, 30" dia. x 14'4".
3—Tyler Screens, 4' x 6'.
2—43" wide cooling conveyors.
6—Robinson Sawtooth Crushers.
2—Pa. Crusher #C-3-30 hammermills.
20—Welded Steel bins, cone bottom, from 15,000 gallon to 90,000 gallon.
1—Keeler Boiler 200 HP, 160 PSI.
8—Bucket elevators, 62' and 90' c-c.

PERRY EQUIPMENT Corp.
1414 N. SIXTH STREET
PHILADELPHIA 22, PA.
Phone: POplar 3-3505

HEAT & POWER CO., Inc.
60 E. 42nd STREET
NEW YORK 17, N. Y.
Phone: MUrray Hill 7-5280

PAN CONVEYORS 30" x 33' and 24" x 18'
PUG MILL 30" x 4½' Chambers
SCREEN 5' x 7' Rotex Sifter
SEPARATOR Dings Cross-belt with electromagnet and Rectifier
ELECTRIC MOTORS 26 Sq. Cage Sleeve Bearing 440/3/60. 3 HP to 75 HP. Good operating condition at fraction of cost of new.

G. & W. H. Corson, Inc.
Plymouth Meeting, Pa.

For Sale—STONE CUTTER—Heavy Duty. Will cut Quartzite up to ten inches thick and 50 inches wide. Good as new. Hydraulic operated. Union Mining Co., 2306 First Natl. Bank Bldg., Pgh. 22, Pa.

R.R. CAR SHAKERS

NATIONAL - NEW - USED
Exceptional values in factory rebuilt units. Purchase, or Long Term Lease.

ARLINGTON INDUSTRIAL SALES
CHICAGO 45, ILLINOIS
7205 N. Western Ave. - BRiargate 4-8607

ECA SPECIALS

2–American heavy duty band type friction dragscraper hoists. Cap. rear drum 5000# @ 600 FPM. Front inhall drum 12,000# @ 250 FPM. Available with or without power. Priced cheap for quick sale. Excellent condition.

EQUIPMENT CORPORATION OF AMERICA
Box 608-P, Clifton Heights, Pa.
Box 43-P, Coraopolis, Pa.
(suburb of Pittsburgh)

FOR SALE OR RENT

2½ Yd. Manitowoc #3900 Crane-Dragline. New 1955. 100' Boom.
1½ Yd. Manitowoc #2000B Crane-Backhoe. New 1956.
75 Ton Whitcomb Diesel Elec. Loco. 500 HP Cat. New 1951.
44 Ton Gen. Elec. Diesel Elec. Loco.
40/50 Ton American Diesel Loco. Crane
25 Ton Ind. BH. Diesel Loco. Crane
25 Ton Gen. Elec. Diesel Elec. Loco.
6 Yd. Bucyrus-Erie Elec. Shovel. 1955.
90 HP Lidgerwood 2D Diesel Hoist.

WHISLER EQUIPMENT CO.
1905 Railway Exchange Bldg., St. Louis 1, Mo.
CHestnut 1-4474

JUST MADE AVAILABLE

3—10' x 78' Dryers with 200 HP Motors
3654 Jaw Crusher with 150 HP Motor
30" Merrick Weightometer

STANLEY B. TROYER EQUIP. CO.
Box 97 Crosby, Minnesota

2—5' x 8' BALL TUBE MILLS

2—5' x 8' Kennedy Van Saun Air Swept Ball Tube Mills with disc feeders, fans, piping, all motors and electric eye mill level controls.

R. C. STANHOPE, INC.
Tel. MU 2-3076 or MU 2-1878
60 E. 42nd St. New York 17, N. Y.

FOR SALE

One used 125 horsepower, 440 volt mine hoist motor, complete with control panel, grid resistors and master switch. Complete details on request. All equipment in good operating condition.

Gouverneur Talc Co., Inc.
Gouverneur, New York

Conveyors, Portable, 40—32 & 24' long
Portable Crushing Plant—30x30 w/Diesel
B-G Asphalt Dryer 833 w/conveyor & boiler
10" Morris Slurry Pump—EXCELLENT
50' Vertical Bucket Elevator w/Bins
125 HP C-B Package 150# W.P. Boiler
25—30 & 37 KW Motor Gen. Exciter Sets
150 & 850 HP Slow Speed Slip Ring Motors

H. & P., 6719 Etzel, St. Louis 30, Mo.

FOR SALE

1 Barber Greene bucket loader, Model 543, pneumatic tires, heavy duty, capacity of 3 yds. per min. Excellent condition. Surplus.

Mr. Joseph Nagy
Columbia Concrete Pds., Inc.
2401 Consaul St. Toledo, Ohio

Buy
U. S. Savings Bonds
Your Best Investment

LOCOMOTIVE FOR SALE

35 Ton Davenport 0-4-0 Mechanical Drive, Serial No. 2316. LeRoi RXIV 8 Cylinder Engine. Excellent Cond.

Interstate Sand & Gravel Co., Inc.
Covington, Indiana

QUARRY EQUIPMENT

Cedarapids Jr. tandem crushing plant, 1036 jaw.
Cedarapids 6C, 1236 twin jaw portable secondary.
Cedarapids 1236 twin jaw crusher.
Cedarapids 1216 twin jaw crusher.
Cedarapids 1036 jaw crusher. Reconditioned.
Cedarapids 2033 hammermill. Slightly used.
Cedarapids 4' x 14' 2-deck screen. New warranty.
2—Cedarapids 4'x12' 3-deck screens. Rebuilt.
Cedarapids 4' x 12' 3-deck screen. New warranty.
Robins 4' x 9' triple deck screen.
Pioneer 4' x 8' double deck screen. Rebuilt.
Telsmith 3' x 8', 3-deck inclined screen.
Aggregates 4' x 14', 3-deck inclined screen.
54" dia. x 23' lg. revolving screen. As is.
4' x 6'6" heavy duty reciprocating feeder. As is.
Cedarapids 42"x10' apron feeder.
Cedarapids 30-8, 3-compartment charging hopper, apron feeder, bucket elevator. New.
27½ ton, single-compartment 8' x 12' bin.
Eagle 36"x29' double dog washer. Good.
McLanahan & Stone 8'x30' double log washer.
60-ton, two-compartment, 8' x 18' storage bin with clam gates.
100-ton, two-compartment, 13" x 23' bin.
Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also conv. belting.

SHOVELS AND CRANES

Lorain L-50J, 1-yd. diesel crane-shovel-hoe.
Lorain L-26, ¾-yd. diesel dragline. Excellent.
Lorain TL-25, ¾-yd. diesel backhoe.
Lima 34 Paymaster ⅝-yd. diesel shovel. Good.
Unit 1020 ⅜-yd. diesel powered shovel.
Koehring 304, ⅜ yd. diesel shovel-backhoe.
Northwest 25, ⅝-yd. Gas shovel.
Bucyrus-Erie 10B, ⅜-yd. gas shovel.
American 100, ½-yd. gas clam-backhoe.
Lorain MC-414, 20-ton Moto-Crane. Reconditioned.
Link Belt HC-90, 25-ton truck crane.
Michigan TLDT-20, 15-ton truck crane.
Lorain MC-254, 15-ton moto-crane.
Lorain TL-20, 10-ton moto-crane.

TRUCKS

2—Euclid 13-yd. bottom dumps. Good.
2—Euclid 27FD, 15-ton rear dumps.
1—Euclid tractor with 3200 gallon water tank semi-trailer.

TRACTORS

1—Caterpillar D-8 with cable angle dozer.
1—Caterpillar D-8 with push block.
1—Caterpillar D-7 with bulldozer, crane boom.
1—Caterpillar D-7 with hydraulic angledozer.
1—Caterpillar D-4 tractor only.
2—Euclids TC-12, twin engine tractors.
1—International TD-24 with cable angledozer.
1—International 300 with loader, backhoe.
1—Letourneau Super C Turnadozer. Excellent.
1—Allis-Chalmers HD9-G tractor with 2-yd. front end loader.

SCRAPERS

2—Allis Chalmers T8-360, 15-yd. overhung engine scrapers.
2—Euclid T8-24, 24-yd. twin engine scrapers.
2—Euclid T8-18, 18-yd. twin engine scrapers
3—Euclid 18-yd. overhung engine scrapers.
1—Euclid 15½-yd. six wheel scraper.
2—Euclid 12-yd. overhung engine scrapers.
1—Euclid 7-yd. overhung engine scraper.
1—Caterpillar 80 tractor drawn scraper.

SHOVEL ATTACHMENTS

Osgood 903, 2-yd., 24' boom, 26'6" stick
Lorain 26, ¾-yd., 19' boom, 16' stick.

GENERATOR SETS

Universal 5KW, D.C., 1200 RPM, 220-250 volts.
Century-Waukesha 15 KW, 1200 RPM, 3/60/127-220.
Century-Continental 15 KW, 1200 RPM, 3/60/120-208.
Cummins 25 KW, 1200 RPM, 3/60/120-208.
Caterpillar 40 KW, 1200 RPM, 3/60/220/440.

DIESEL POWER UNITS

Cat. D7700, 74 H.P. at 1000 PFM. Rebuilt.
Cat. D13000, 128 H.P. at 1000 RPM. Rebuilt.
GM 321C, 3-cylinder, new.
GM 671, 6-cylinder. Rebuilt.

AIR COMPRESSORS

2—1905 cu. ft. Ingersoll Rand gas portables.
2—125 cu. ft. Gardner-Denver gas portables
160 cu. ft. Worthington gas portable.
315 cu. ft. Schramm gas portable.
500 cu. ft. Ingersoll-Rand, Waukesha power.

L. B. SMITH, INC.
Camp Hill, Pa.
Phone Harrisburg REgent 7-3431

DEPENDABLE USED MACHINES

SPECIAL: Lorain 20 ton truck crane powered by Waukesha 6MZA gas. eng., w/60' boom

Hopto Scrap Grapple	5x16 Telsmith d.d. screen	360 Hopto on GMC tandem truck
P&H #150½ yd. backhoe	¾ yd. Trojan LC100 loader	Amer. 50B 3 drum hoist w/slewer
5x14 Telsmith d.d. screen	Unit #614 ½ yd. backhoe	8Shovel front for Lorain 77B
4x10 Telsmith d.d. screen	Allis Chalmers dozer HD10	105TMC Hopto for mounting on HD5
Unit #514 ½ yd. backhoe	Lima #34 Paymaster backhoe	Terratrac 500 w/backhoe & trailer

This equipment rebuilt in our modern plant by expert mechanics. Come see it!

10004 Southwest Highway TRACTOR & EQUIPMENT CO. Oak Lawn, Illinois

OUR 52nd YEAR

Lancaster "Iriquois" Pug Mills
Hardinge 6x12 Rod Mill
Allis-Chalmers 4x6 Ball Mill
Kennedy #19-S Gearless Gyratory
Kennedy #25½-S Gyratory, 220 v.
Sturtevant #1 Rotary Crusher
Sturtevant #1½ Rotary Crusher
New England Jaw Crusher 14" x 28"
Farrel #12-B Jaw Crusher 36" x 18"
Farrel Lab. Jaw Crusher 6" x 2"
Acme Jaw Crusher 14x26" Steel Frame
Acme Jaw Crusher 9" x 16"
Iowa 25 Yd. Portable Crushing Plant
Syntron F-44 Grizzley Feeder
Syntron F-4100 Feeder w/controls
New Holland Plate Feeder 24" x 60"
Jeffrey Traylor #4 V.b. Feeder w/contr.
Heatherington Dryer, 6' x 32', 50 H.P.
4—Lancaster Mixers, EMG-4
Link-Belt 3x5 D.D. Screen U.P.
Reliance 4' x 10' Scalping Screen
Robins Gyrex 42" x 6' Scalping Screen
Seco 5' x 16' D.D. Vibrating Screen
Niagara 4' x 14' Single Deck Screen
Niagara 2½' x 12' Single Deck Screen
New Universal Screens in stock
844' Manganese Chain w/18" Buckets
16" Used Rex Idlers
18" Used Jeffrey Idlers
30" to 48" Used Robins Idlers
25, 30, 40 and 50 H.P. Motors
Over 800 Gear Reducers in stock.

G. A. UNVERZAGT & SONS, INC.

136 Coit St. Irvington 11, N. J.
Essex 3-8105

CHOICE EQUIPMENT AVAILABLE

2—1956-1958 Ford F-800, Trailmobile Tractor Rear Dump Trailer Combination
2—ID-66 15 cu. yd. Trailmobile Rear Dump Trailers
1—¾ yd. Koehring Model 304 Crane

WRITE OR CALL FOR PHOTOGRAPHS OR UNITS CAN BE SEEN AT

WEST SAND AND GRAVEL COMPANY, INC.

2801 Rady Street, Richmond, Virginia
Telephone MI lton 4-3001

CRUSHING PLANT

Universal TD24 Gravelmaster, 1024 RB jaw, 24" Twin Roll, 3x10 3½ deck screen Roto-Vator, excellent plant, on tandems, 200 TPH capacity.

18 TRANSIT MIXERS

Rex 5 Yd. Mixer, Chrysler engine, Rebuilt & Perfect.

Rex 6 Yd. A-W, open end, flush tank, mounted on I-H 190 tandem—1953.

MISCELLANEOUS

Bantam M-49 Crane, 40' Boom, on GMC carrier, outriggers.

I-H TD14 2 Yd. Hydraulic bucket, new tracks.

EIGHMY EQUIPMENT COMPANY

Pierpont at W. State St. WO 4-6706
ROCKFORD, ILLINOIS

INDEX TO *Broadcast Advertisers*

Arlington Industrial Sales 265
Asphaltic Concrete, Inc. 259

Blue Ribbon Sand & Gravel Co. 263
Bonded Equipment Co. 267
Bonded Scale & Machine Co. 263
Brill Equipment Co. 264, 267

Columbia Concrete Pds. Inc. 265
Corson, Inc., G. & W. H. 265
County Line Stone Co., Inc. 259

Dailey, Inc., Wm. E. 260
Dawson, James R. 267

Eighmy Equipment Co. 266
Electric Equipment Co. 267
Equipment Corp. of America 265
Ereco Diamond Core Drilling Co. 260
Erie Sand & Gravel Co. 267

Famalette Equipment Co., Frank 264
French Co., James C. 259

Glazer Steel Corp. 260, 263
Gouverneur Talc Co., Inc. 265
Government Surplus Sales 267

H & P Machy. Co. 265
Heat & Power Co., Inc. 260
Heidenreich, Jr., E. Lee 260

Interstate Sand & Gravel Co., Inc. 262, 265

Johnson & Hoehler, Inc. 262

Kentucky-Tennessee Clay Co. 267

Lefton Industrial Corp. 263
Locke Equipment Co., Inc. 260
Lubrecht, III Construction, Wm. 263

Machinery Center 261
Machinery & Equipment Co. 262
MacNeal, Inc., Donald B. 266
McShane Co., Inc., T. S. 267
Mid-Continent Equip. Co., Inc. 264

New Jersey Drilling Co. 260
Nussbaum Electric Co. 262

O'Neill, A. J. 267

Paltech Company 267
Pennsylvania Drilling Co. 260
Perry Equipment Corp. 262, 265
Porter, Arthur G. 266
Power Equipment Co. 267
Process Plants 267

Smith, Inc., L. B. 265
Standard Industries, Inc. 266
Stanhope, Inc., R. C. 265
Swabb Equip. Co., Inc., Frank 260

Taconic Equipment Corp. 260
Thomasville Drilling & Testing Co. 260
Tractor & Equipment Co. 265
Troyer Co., Stanley B. 262, 265

Union Mining Co. 263, 265
Unverzagt & Sons, Inc. 266

Wenzel Mach. Rental & Sales Co., Inc. 260, 262
West Sand & Gravel Co., Inc. 266
Whisler Equipment Co. 265
Williams Construction Co. 262
Wisser and Cox 260

WANTED

Used aggregate scrubber with capacity of 400 to 600 tons per hour.

Call E. B. Moubry at

STANDARD INDUSTRIES, INC.

TEmple 5-2371 Tulsa, Oklahoma

ATTACHMENTS

PULL SHOVEL — ¾ YD.
POWER SHOVEL — ¾ YD.
FAIR LEADS — TAGLINE
BOOM SECTIONS — JIBS
NORTHWEST — MODEL 25
MANITOWOC — MODEL 2000
UNIT — MODEL 614

TRUCK CRANES
BOOM SEC. JIBS

BROWNING MODEL T20
BAY CITY MODEL 190
NORTHWEST MODEL 25
LORAIN MODEL M.C. 524

RIGID INSPECTION INVITED

DONALD B. MacNEAL, INC.

12100 S. Loomis St. - Tel.: PUllman 5-5040
CHICAGO 43, ILLINOIS

FOR SALE

3—Fairbanks-Morse Model 32-E-14, 480 volt, 3 phase 60 cycle AC diesel engine generating sets.

1—121 KVA, 150 H. P., 2 cylinder, 300 RPM, Serial #884054, Woodward governor. Maximum silencer and V-belt driven exciter.

1—250 KVA, 300 H. P., .80 P. F., 4 cylinder Woodward governor. Maxim silencer, and V-belt driven exciter.

1—375 KVA, 450 H. P., .80 P. F., 6 cylinder, 300 RPM. Serial #885431, Woodward governor. Maxim silencer. V-belt driven exciter.

All units with electric control panels, pumps and accessories. Lot total $15,000.00 or will separate.

ARTHUR G. PORTER

6345 Washburn Ave. So.
Minneapolis 23, Minn.

APRON FEEDER: Heavy duty, 4 ft. x 14 ft. with 15 H.P. motor.

JAW CRUSHERS: 18 x 30, 36 x 42, 36 x 48, 40 x 42, 48 x 60, 56 x 72", all steel, with or without motors and controls.

CLASSIFIER: Dorr 19' bowl with 8' x 37'6" rake, complete with motor and drive.

BALL MILLS: One 5½ ft. x 22 ft., two 7 ft. x 24 ft., with or without motors. Hardinge 8' x 36" and 8' x 48" Conical Mills complete with 2200 volt motors.

KILNS: Two 8' x 125 ft.

CRUSHING ROLLS: One Allis Chalmers and one Traylor 72" x 24". One 78" x 24".

CONVEYORS: One 36" and one 42" x 736 ft., complete with all equipment and supporting structure.

LOCOMOTIVES: One General Electric 25 ton and one 44 ton, standard gauge, diesel electric.

HOISTS: Lidgerwood single drum 7' dia., 5'7" face, 32,000 lbs. pull, 1⅝" rope, 250 or 450 FPM, 150 or 250 H.P. One single drum Nordberg 5' dia., 5' face, 1⅛" rope, 100 H.P., 750 FPM. One Nordberg double clutched drum 10' x 10', 1½" rope, 1250 H.P., 1200 FPM. All the above with post brakes, Lilly controls, 2200 volt motors and controls. Other hoists 100 H.P. to 2500 H.P.

WE BUY AND SELL EQUIPMENT
THROUGHOUT
NORTH AND CENTRAL AMERICA

A. J. O'NEILL
Lansdowne Theatre Building
Lansdowne, Pa.
Phila. Phones: MAdison 3-8300 - 3-8301

FOR SALE

Hardinge Conical Ball Mill 4½' x 16". Oliver Vac Filter, 3' x 6' Type 316 S.S. Rotex Sifters—40" x 60" 2 Deck, 40" x 120" 5 Deck Bucket Elevator 20" x 30", 10' High, Buckets 5" x 12". Micro Atomizer No. 5 SS.

PROCESS PLANTS SERVICE, INC.
267 Central Ave. Clark, N. J.
Phone Fulton 1-1183-4

BEST BELT BUYS

Heavy duty quality, 2500-3000# cover tensile, 16-19# friction pull. Brand new, factory fresh, 3 weeks delivery.

4 ply 28 oz.		LIST	SELL
14"	1/8"x1/32"	$4.31	$2.42
16"	1/8"x1/32"	$4.86	$2.72
18"	1/8"x1/32"	$5.40	$3.02
18"	1/8"x1/16"	$5.69	$3.19
20"	1/8"x1/32"	$5.90	$3.32
24"	1/8"x1/32"	$6.95	$3.90
24"	1/8"x1/16" (5 ply)	$8.54	$4.78
4 ply 32 oz.			
24"	1/8"x1/32"	$7.79	$4.36
30"	1/8"x1/16"	$9.58	$5.36

Many other sizes. Samples on request.
Distributorships available.

PALTECH CO.
New Canaan, Conn. WO 6-4126

SUBJECT TO PRIOR SALE

USED MURPHY DIESEL, MODEL ME-4, S/N 17102. SKID MOUNTED, POWER TAKE-OFF DRIVE, WITH TWIN DISC CLUTCH. RADIATOR COOLED. FAN. LATE STYLE RADIATOR WITH ANTI-VIBRATION EQUIPMENT. SWING-OUT TYPE FILTERS. GOOD CONDITION. WIRE, CALL OR WRITE

T. C. Jones

T. S. McSHANE COMPANY
1115 Howard Street Omaha, Nebraska

POWER EQUIPMENT CO.
Offers
BARGAIN PRICES ON GUARANTEED
NEW and Rebuilt MOTORS!

JANUARY SPECIALS

GUARANTEED REBUILT MOTORS
220/440 V. 60 Cycle—3 Phase

HP	Make	Type	Speed
500	L.A. B.B. Splash	FX-146	3600
300	GESB Open	KT-566	720
250	El. Dyn. T.E.F.C.B.B.	KNX	1800
150	Wagner B.B. Drip	RP-633	3600
150	West. T.E.F.C. B.B.	CS-8120	1200
125	Reliance B.B. Open	AA-504	3600
125	F.M. B.B. Open	H	600

Send for our FREE Catalog. Cash for your surplus.

Large line of motors, control equipment, AC & DC Generators, MG sets and transformers.

Phone or Wire Us Collect

POWER EQUIPMENT CO.
8 Cairn St., Rochester 2, N. Y.
Phone BEverly 5-1662

For Sale

Undeveloped rock & sand midway between Sioux City, Ia. & Sioux Falls, S. D. Supply almost unlimited. Has been tested and is high in rock. Has railroad going through it with road bed for siding. If interested in working large or small amount contact me.

James R. Dawson
Hawarden, Iowa

FOR SALE USED EQUIPMENT

Five Mancha Little Trammers, ten Gould-National Type XVLZ-13 Batteries and five Hertner Type K-1-20-17 Battery Chargers, located Mayfield, Ky.

KENTUCKY-TENNESSEE CLAY COMPANY
Mayfield, Kentucky

ROTARY KILN

Size: 6 ft. dia. 124 ft. long. Thickness, ⅝" plate. Drive: 15 H.P. motor, 870 R.P.M. Westinghouse. Varied speed. Total reduction 378 to 1. Speed, ½ R.P.M. Reasonable.

Bonded Equipment Co.
24155 Schoenherr Rd., Warren, Mich.
Phone PRescott 8-6640

YOU CAN BUY
Government Surplus
ANYONE IS ELIGIBLE

"10 billion to be sold" is the estimate for '59-'60. Weekly letter tells what is being sold, when, where and who to contact.

$7 for 3 mo. $25 per yr.

GOVERNMENT SURPLUS SALES
P. O. Box 6602PQ
Washington 9, D. C.

SAND BUSINESS
FOR SALE ON LAKE ERIE

Consists of equipment on leased docks and one owned parcel, also two self-propelled dredges.

Owner will accept written proposals on this property as a complete unit or piece meal by locations reserving the right to accept or reject such proposal.

For further information call

E. J. Berry
Erie Sand & Gravel Co.
GL 2-6931 or Box 153 Erie, Pa.

LIQUIDATION
COMPLETE CEMENT PLANT, AKRON, N.Y.
including

2—Allis Chalmers 8' x 100' Rotary Kiln.
1—Raymond 36" Bowl Mill, 50 HP.
1—Vulcan 6' x 50' Dryer, 25 HP.
1—Clyde #3 Hydrator with motor.
1—Raymond 16' Double Whizzer Separator, 75 HP.
14—Bucket Elevators, chain mounted, steel casing, 25' to 56' c.c.
1200'—9" and 14" Screw Conveyor.
15—Bins from 6' x 7', 6" x 12' to 17' x 20' x 12'.
1—Steel Building, 60' x 80' x 40' high.
1—Steel Building, 65' x 125' x 40' high.
Miscellaneous: 500 tons Structural Steel; 2500 HP motors, 3/60/440 volt from 1 to 300 HP; Speed Reducers; Steel Grating.

OTHER LOCATIONS

ROTARY KILNS—DRYERS—COOLERS

1—Traylor 11' x 155' Rotary Kiln, ⅞" shell.
1—Allis Chalmers 9' x 130' Rotary Kiln, ¾" shell.
1—Vulcan 8' x 87', ½" shell.
2—Vulcan 7' x 80', ½" shell.
2—Link Belt Roto Louvre Dryers, 6'4" x 24'.
1—Rennenberg 6' x 50', ⅜" shell.
1—Ruggles Cole 5' x 30', ⅜" shell.
1—Allis Chalmers 4' x 40'.
1—Allis Chalmers 4' x 30', ⅜" shell.
1—34" x 30', 5/16" shell.

MILLS—CRUSHERS—PULVERIZERS

2—Traylor Compeb Mills 7' x 27' with 1—500 HP & 1—600 HP motor 3/60/440.
1—Hardinge 4½" x 24" Steel Conical Mill.
1—Denver 3' x 5' Continuous Ball Mill.
1—Telsmith Red. Crusher no. 46, 50 HP.
2—Kennedy #6 Gyratory Crushers, 50 HP.
5—Jaw Crushers 12" x 18" to 36" x 48".
1—Penn. Non-Clog Swing Hammermill, size 5060, Hopper opening 47" x 60", cap., 200-275 tons per hour, UNUSED.
1—Penn. Super-Thor Hammermill, size SXT-13, 250 HP.
3—Raymond 5 Roll Low Side Mills.

AIR SEPARATORS—SCREENS

1—18' dia. Raymond Double Whizzer Separator with 100 HP motor.
1—14' dia. Raymond Double Whizzer Separator with 60 HP motor.
1—Gayco 5' dia. mechanical Air Separator.
1—Raymond 30" dia. Whizzer Separator.
1—Tyler Hummer Screen 4' x 10' type 38 with V-52 Vibrators and Thermionic unit.

CONVEYORS

1—Fuller-Kinyon Conveying System, type H257, 100 HP.
2—Fuller-Kinyon Conveying Systems type 10-B-No. R, 75 HP.

BRILL EQUIPMENT COMPANY
35-65 Jabez Street
Newark 5, N. J.
Tel: Market 3-7420

MOTORS • GENERATORS
TRANSFORMERS
NEW • REBUILT
ELECTRIC EQUIPMENT CO.
WORLD'S LARGEST INVENTORY
CALL COLLECT GL 3-6783
P.O. BOX 51 • ROCHESTER 1, N.Y.

Index to Advertisers

A

Albany Felt Co. 249

*Allis-Chalmers 120

Alloy Rods Co. 81

American Enka Corp. 210-211

*American Pulverizer Co. 225

*American Steel & Wire Division, U. S. Steel Corp. 33-36

*Anaconda Wire & Cable Co. 214-215

*Armco Drainage & Metal Products, Inc. 245

Atlantic Steel Corp. 41

*Atlas Copco 197

Austin Powder Co. 217

B

*Bailey Meter Co. 258

*Bethlehem Steel Co. 273

Blount Co., J. G. 48

Bradley Pulverizer Co. 235

Broadcast Section 259-267

*Buell Engineering Co., Inc. 70

Buffalo Wire Works 212

C

Cambridge Instrument Co., Inc. 255

Canadian Refractories Ltd. 117

Cape Ann Anchor & Forge Co. 208

Caterpillar Tractor Co. 20-21, 49, 179, 184

Chicago Pneumatic Tool Co. 22

Chrysler Corp., Dodge Division 84

Cities Service Oil Co. 185

*Clark Equipment Co. 42-43, 44-45

*Cleveland Wire Cloth & Mfg. Co. 37

*Coates Steel Products Co. 239

*Colorado Fuel & Iron Works 136

Columbia Steel Casting Co. 252

*Combustion Engineering, Inc., Raymond Division 247

*Crescent Belt Fastener Co. 65

D

Deere Industrial Division, John 16-17

*Deister Concentrator Co. 216

*Denver Equipment Co. 221

*Diamond Iron Works, Inc. 73

Diamond Power Specialty Corp. 64

Dodge Division, Chrysler Corp. 84

Dracco Division, Fuller Company 189

Du Pont de Nemours & Co., E. I. 222-223

E

*Eagle Iron Works 25

Ensign-Bickford Co. 243

Euclid Division, General Motors Corp. 169-172

F

*Falk Corporation 77

Farrell-Cheek Steel Co. 59

Farval Corporation ..... Inside Back Cover

Fate-Root-Heath Co., Plymouth Locomotive Works 192

Fiske Bros. Refining Co., Lubriplate Div. 220

Frog Switch & Mfg. Co. 178

*Fuller Company 128-129

G

*Gardner-Denver Co. 250-251

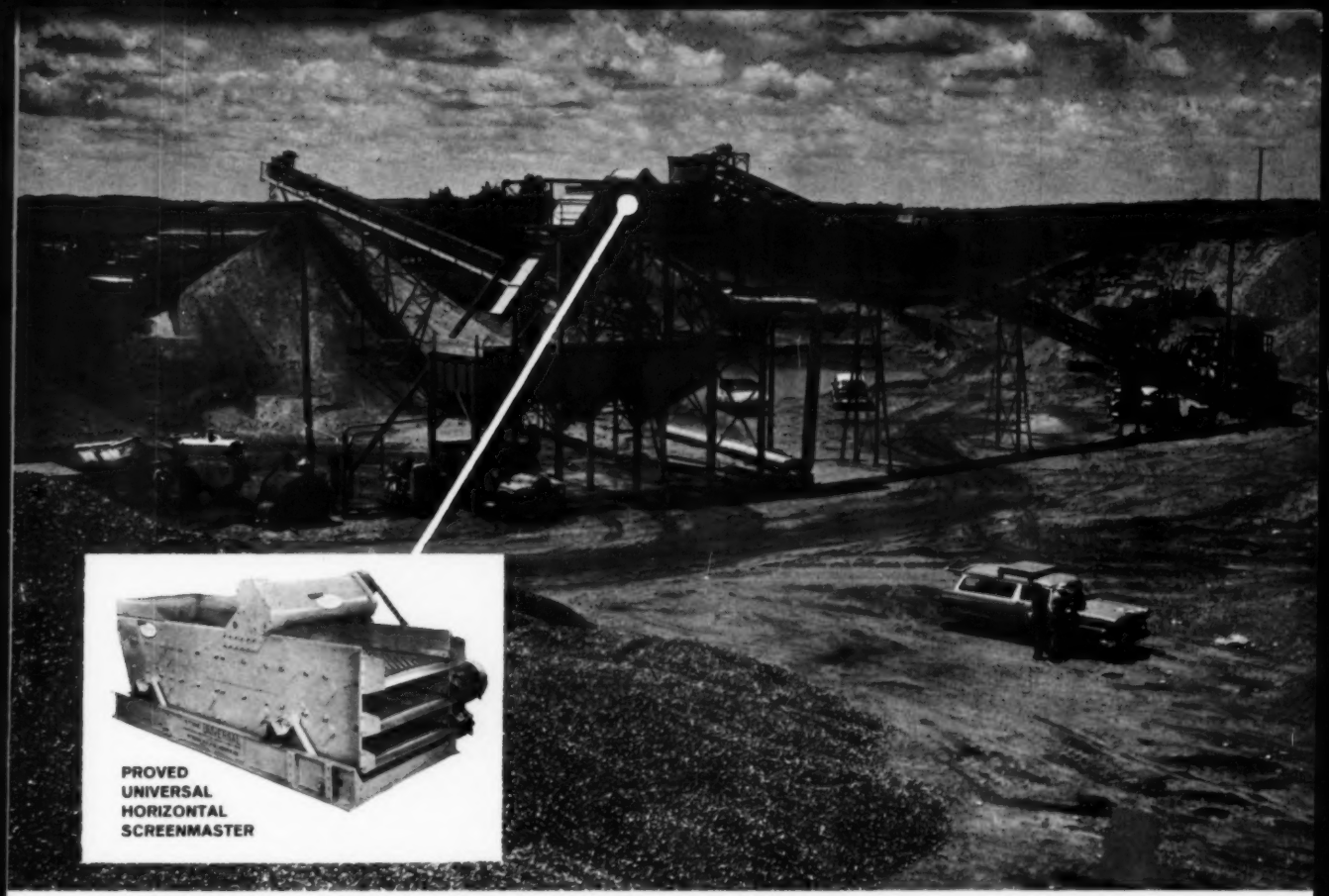
Gates Rubber Co. 67

General Electric Co. 52-53

General Motors Corp. 169-172

*See also Detailed Information in 1959 Pit and Quarry HANDBOOK and/or CONCRETE INDUSTRIES YEARBOOK.

Enter 269 on card, page 241 →



Universal's Screenmaster working in the Barton Construction Co. pit near Rosemont, Minn. As a result of its outstanding performance in sizing material for their various paving jobs, Barton recently purchased a Universal Portable Crushing Plant equipped with a Universal Low-Boy Screenmaster.

FLOATS ON AIR AND RUBBER . . . A SUPERIOR PERFORMER EVEN IN DAMP OR WET MATERIAL

A proved combination of air springs and rubber-bushed phasing bars has made Universal's Screenmaster the standard for profitable production. Owners and those who have seen it in action call it the most efficient screen developed in years.

Eliminates Leaf and Coil Springs

The Screenmaster floats on air and rubber. Gone completely are the old metal leaf and coil springs. And with them. . . their destructive violence. . . their unpredictable reaction to loads . . . their unnecessary wear on basket and cloth. . . their high cost of continuous replacement!

Its exclusive features combine to give the Screenmaster the most aggressive screening, the most positive separation, the lowest maintenance and the greatest capacities ever.

The screen, with its exclusive air springs and rubber-bushed phasing bars, acts as a single unit, transmits smooth, sharp and aggressive action over the entire screening area. *The air springs* replace conventional coil springs . . . cushion and absorb shock while *the phasing bars* control the screen, eliminate the destructive, corner to corner violence of ordinary screens.

Snappy aggressiveness produced by this exclusive combination, prevents blinding, blanketing or squatting. . . cuts through wet or damp material quickly — resulting in greater capacity and higher profit. The Universal Screenmaster also gives you more screening area. Its rugged feed box absorbs and distributes material over full width of screen deck; a precision engineered power unit gives you long trouble-free life.

Put this profit-making Universal Screenmaster to work for you. There's a size for every requirement. Your Universal Distributor can help select the best for your operation whether stationary or portable.

PETTIBONE
UNIVERSAL
In Cedar Rapids Since 1906

UNIVERSAL ENGINEERING CORPORATION

619 C Avenue N.W., Cedar Rapids, Iowa

Subsidiary of Pettibone Mulliken Corporation, 4700 W. Division Street, Chicago 51, Illinois

Georgia Iron Works Co. 231

Getman Brothers 213

Goodyear Tire & Rubber Co. 1

Gruendler Crusher & Pulverizer Co. 2

H

*Hammermills, Inc. 254

*Hardinge Company, Inc. 27

Hayward Company 62

*Hendrick Mfg. Co. 193

Hendrix Mfg. Co., Inc. 227

*Hewitt-Robins 201

Hough Co., Frank G. 124-125

*Howe Scale Co. 204

I

Industrial Physics and Electronics Co. 224

*Ingersoll-Rand Co. ..... Inside Front Cover

International Harvester Co., Construction Equipment Div. 186-187

International Nickel Co. 232

*Iowa Manufacturing Co. 203

J

Jaeger Machine Co. 7

*James Gear Mfg. Co., D. O. 216

Jeffrey Mfg. Co. 76

Jones & Laughlin Steel Corp. 118-119

*Joy Manufacturing Co. 122, 255

K

KW-Dart Truck Co. 71

Kaiser Engineers 72

Kansas City Hay Press Co. 58

*Kennedy-Van Saun Mfg. & Engrg. Corp. 74-75

Koehring Company 78-79

*Kraft Bag Corp. ..... Outside Back Cover

L

*Leeds & Northup 63

LeTourneau-Westinghouse Co. 194-195

Lima Works, Construction Equipment Division, Baldwin-Lima-Hamilton Corp. 190-191

Lincoln Welding Works 249

*Link-Belt Company 31

Lubriplate Division, Fiske Bros. Refining Co. 220

Lukens Steel Co. 226

M

Macdonald Engineering Co. 238

*Mack Trucks, Inc. 134-135

Manganese Steel Forge Co. 229

Manhattan Rubber Div., Raybestos-Manhattan, Inc. 218-219

Manitowoc Engineering Corp. 196

Marion Power Shovel Co. 133

Massey-Ferguson Industrial Division 244

McDermott Brothers Co., Inc. 68

McLanahan & Stone Corp. 50, 51

McNally Pittsburg Mfg. Co. 66

Mine & Smelter Supply Co. 198, 199

*Minneapolis-Honeywell 38-39

*Mission Mfg. Co. 69

*Morris Machine Works 121

N

National Crushed Stone Assn. 234

National Iron Co. 130

National Ready Mixed Concrete Assn. 256-257

National Sand & Gravel Assn. 256-257

National Wire Cloth Co. 248

*Nordberg Manufacturing Co. 60-61

*Northern Blower Co. 59

Northwest Engineering Co. 5

*See also Detailed Information in 1959 Pit and Quarry HANDBOOK and/or CONCRETE INDUSTRIES YEARBOOK.

Enter 271 on card, page 241 →

LORAIN MOTO-LOADER SCORES AT 40-ACRE PIT "SPEED OF TRAVEL AND LOADING IMPRESSIVE"

Working on various stockpiles at this 40-acre pit, this 2-yard Lorain ML-157 Moto-Loader loads trucks of 5 to 35-yard capacity. "Speed of travel and loading impressive"—that's how the Gillissee Construction Company, Grand Rapids, Michigan, sums up the profit-building performance of their fast-moving Moto-Loader.

Wherever they are used, Moto-Loaders have the speed and stamina to deliver impressive results. It's Lorain's *balanced* design that makes the big difference in output and profits.

WEIGHT BALANCE. Lorain puts the center of gravity low where it belongs . . . distributes weight on axles for ground-hugging travel without bounce or teeter under heaviest loads.

CONTROL BALANCE for co-ordinated work "flow." One-foot control of direction and speed . . . power transmission. One hand can always be on the steering wheel . . . the other hand always free for other operations.

POWER BALANCE matches hydraulic capacity, engine size and transmission of power to wheels for steady, positive travel, crowding, digging . . . for smooth high-production loading cycles. No wasted power—no wheel spinning.

Besides the ML-157 with its 7,000-pound carrying capacity, there's the ML-153 with a 6,000-pound capacity. For details, contact your Lorain distributor.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

One-foot travel control boosts payloads . . . frees operator's hands for steering, bucket control and other operations. By pivoting his foot between two adjacent pedals, operator controls both forward and reverse travel and acceleration.

LORAIN®

ON THE MOVE

PLANTS in Lorain, Elyria and Bucyrus, Ohio.

PRODUCTS—Power shovels, cranes, draglines, clamshells, and hoes on crawler mountings from ⅜- to 2½-yard capacity · Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes · Rubber tire front-end Moto-Loaders in 1¾- and 2-yard models.

OUTLETS—Lorain products sold and serviced by 249 distributor outlets throughout the world.

O

Oliver Corporation 57

Owen Bucket Co. 40

P

Pekor Iron Works, Inc. 46

*Pennsylvania Crusher Division, Bath Iron Works Corp. 137

*Pettibone Mulliken Corp. 254, 269

Power Curve Conveyor Co. 237

Productive Equipment Corp. 9

Pulverizing Machinery Division, Metals Disintegrating Co., Inc. 162

R

Ramset Fastening System, Winchester-Western Division, Olin Mathieson Chemical Corp. 200

Raybestos-Manhattan, Inc., Manhattan Rubber Div. 218-219

*Raymond Division, Combustion Engineering, Inc. 247

Rockwell-Standard Corp., Transmission & Axle Division – Detroit 8

Roebling's Sons Corp., J. A. 202

Ross Engineers Ltd. 252

Ross Screen & Feeder Co. 252

S

*Sauerman Bros., Inc. 12

Schaffer Poidometer Co. 228

*Screen Equipment Co., Inc. 28-29

Sight Feed Generator Co. 46

Simplicity Systems Co. 19

*Smidth & Co., F. L. 80, 132

*Smith Engineering Works 14

Southern Tire Co. 130

Sprague & Henwood, Inc. 26

Spray Products Corp. 249

Spraying Systems Co. 252

Standard Metal Mfg. Co. 254

Star Wire Screen & Iron Works, Inc. 237

*Stephens-Adamson Mfg. Co. 47

*Sturtevant Mill Co. 4

*Syntron Company 18

T

Taylor-Wharton Iron & Steel Co. 180

Thew Shovel Co. 271

*Thomas Foundries, Inc. 246

Thor Power Tool Co. 6

Timken Roller Bearing Co., Rock Bit Division 131

Tool Steel Gear & Pinion Co. 206-207

Torrington Company 253

*Traylor Engrg. & Mfg. Co. 233, 274

*Twin City Iron & Wire Co. 255

*Tyler Co., W. S. 123

U

Union Bag-Camp Paper Corp. 205

United States Rubber Co. 82

*United States Steel Co. 33-36

*Universal Engineering Corp. 269

Universal Road Machinery Co. 248

*Universal Vibrating Screen Co. 178

V

Victor Equipment Co. 127

W

Webster Mfg. Co. 209

West Virginia Pulp & Paper Co. 10

*Western Machinery Co. 183

*Western Precipitation Corp. 126

Whitmore Mfg. Co. 230

*Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp. 136

*Williams Patent Crusher & Pulverizer Co. 240

Winslow Government Standard Scale Works, Inc. 255

*See also Detailed Information in 1959 Pit and Quarry HANDBOOK and/or CONCRETE INDUSTRIES YEARBOOK.

Enter 273 on card, page 241 →

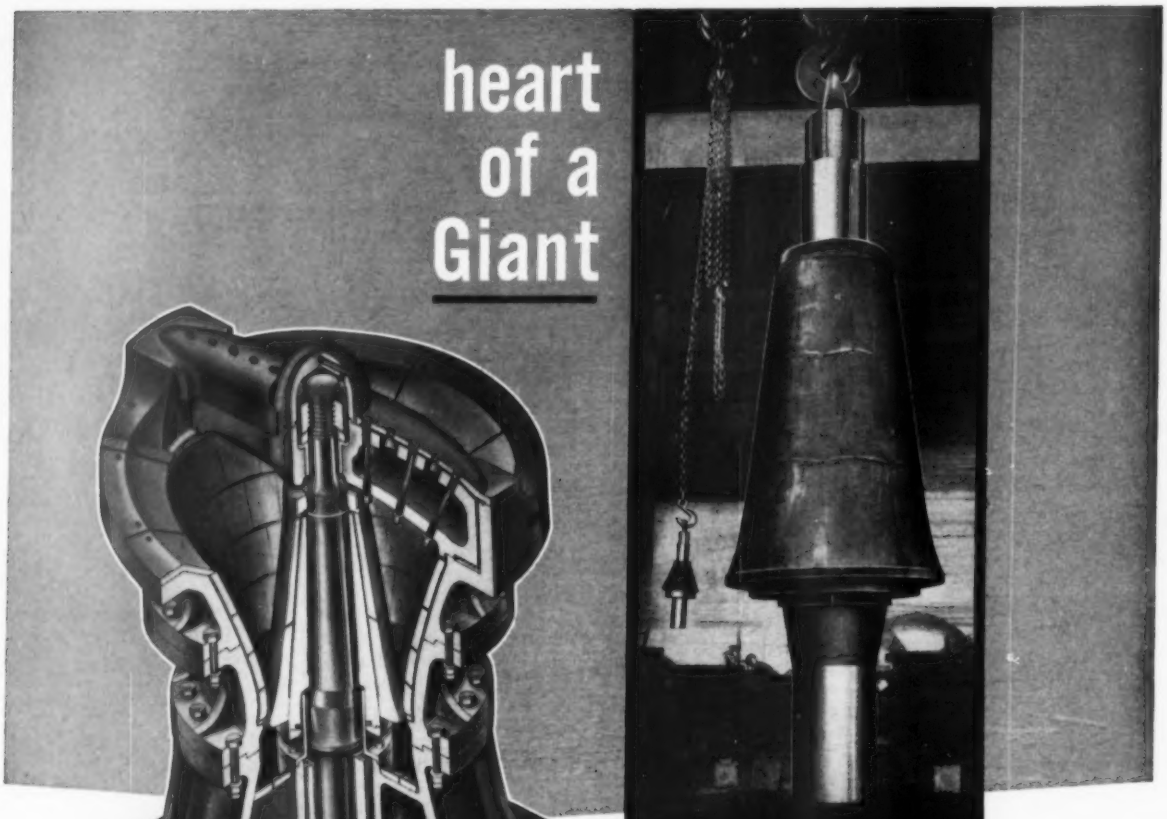
Bethlehem Rope Helps Them Scoop Up Taconite. Here you see an 8-yd shovel at Erie Mining Company, Hoyt Lakes, Minnesota, taking big bites into nature's stockpile of taconite. Because the ore is hard, and because of the limits of the primary crusher, the shovel is equipped with a 5-yd dipper. Two pieces of 1½-in. Bethlehem Wire Rope, 212 ft long, are used in the hoist line. The construction is 6 x 25 W improved plow steel, IWRC, Formset, one right lang lay and one left lang lay. Bethlehem 1⅛-in. rope, in the same construction, is also used for the crowd and haulback lines. This is the kind of tough, all-weather application where Bethlehem Wire Rope performs at its best.

Bethlehem Steel Company, Bethlehem, Pa. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem Wire Rope

BETHLEHEM STEEL

heart of a Giant



The head and shaft of 1'-3" Traylor Type TY Gyratory Reduction Crusher suspended next to the massive head and shaft of a 60" Traylor Type TC Bulldog Gyratory Crusher. One weighs 480 pounds, the other 140,000 pounds.

Visit us at Booth No. 56 at the CRUSHED STONE SHOW—Feb. 22 thru 24 Conrad Hilton, Chicago.

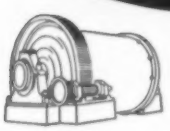
Traylor TC GYRATORY CRUSHERS

Traylor Engineering is a specialist in designing and building primary gyratory crushers. The mammoth 60" crusher is capable of delivering 32,000 tons of product per eight-hour day. Traylor Gyratory Crushers feature original non-choking, self-tightening bell head and curved concaves. Write for Bulletin No. 1126 today.

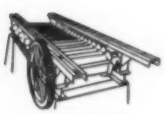
Traylor

ENGINEERING AND MFG. CO. *division of* **FULLER COMPANY**
1506 MILL ST., ALLENTOWN, PA.
Sales Offices: New York—Chicago—San Francisco
Canadian Mfr.: Canadian Vickers, Ltd., Montreal, P.Q.

FULLER COMPANY GENERAL AMERICAN


BALL MILLS

ROTARY KILNS


APRON FEEDERS

PRIMARY GYRATORY CRUSHERS

JAW CRUSHERS

SECONDARY GYRATORY CRUSHERS

Farval works in Africa, too—lubrication time reduced 93%, grease use cut 83%

FARVAL—
Studies in Centralized Lubrication
No. 202

● Here at a copper mine in Northern Rhodesia, Farval systems were installed on power shovels used to remove overburden. Not only have bearings been protected fully by adequate lubrication, but the time and lubricant savings reported are beyond expectation.

Time required for lubricating shovels has been reduced from two hours per shift to only eight minutes — a 93% reduction. Grease consumption has been cut from 400 pounds per month to only 70 pounds—a saving of 83%.

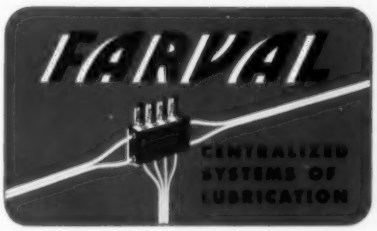
Farval Centralized Lubrication proves its value in scores of mining operations like this—remote from repair shops and supply centers, where economy and dependability pay real dividends.

Find out how Farval can help you. Write for Bulletin 26-S, newly revised presentation of the features and advantages of Farval Centralized Lubrication, complete with engineering data on all types of systems. The Farval Corporation, 3280 E. 80th St., Cleveland 4, O.

Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.

KEYS TO ADEQUATE LUBRICATION—
Wherever you see the sign of Farval—familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine is being properly lubricated.

Inset above shows Farval lines and valves mounted on shovel undercarriage.



Enter Cover 3 on card, page 241

"It wasn't there last year!"

This is the new 300,000 sq. ft. addition to Kraft Bag Corporation's converting plant at St. Marys, Georgia, scheduled to go "on stream" in February.

Here, in one giant integrated operation, logs from our own forest lands are turned into pulp, then into paper, and finally into heavy duty multiwall shipping sacks, using the most modern machinery and equipment the industry affords.

This expansion of our facilities is one more step in our constant efforts to provide our customers with the best in quality and service.

We invite your inquiries.

Paper Mill at St. Marys, Ga.

KRAFT BAG CORPORATION

Gilman Paper Company Subsidiary

630 Fifth Avenue, New York 20, N. Y.

Daily News Building, Chicago 6, Ill.

Enter Cover 4 on card, page 241